

2 Sheets—Sheet 1.

No. 478,592.

Patented July 12, 1892.

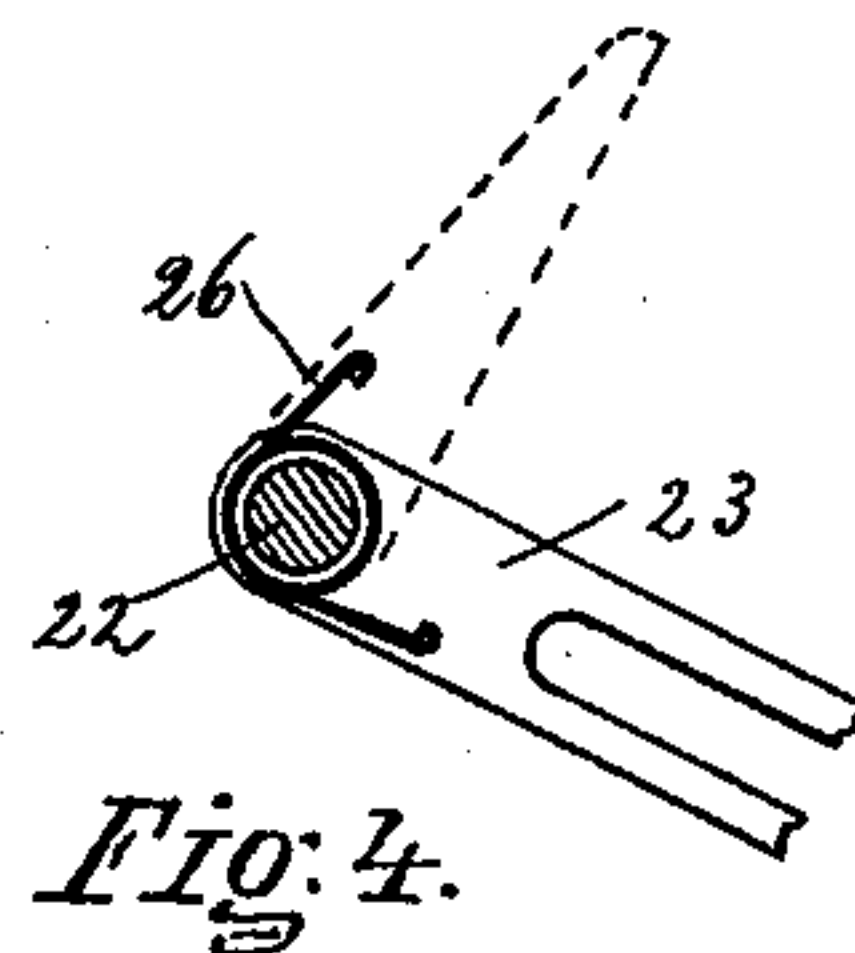


Fig: 4.

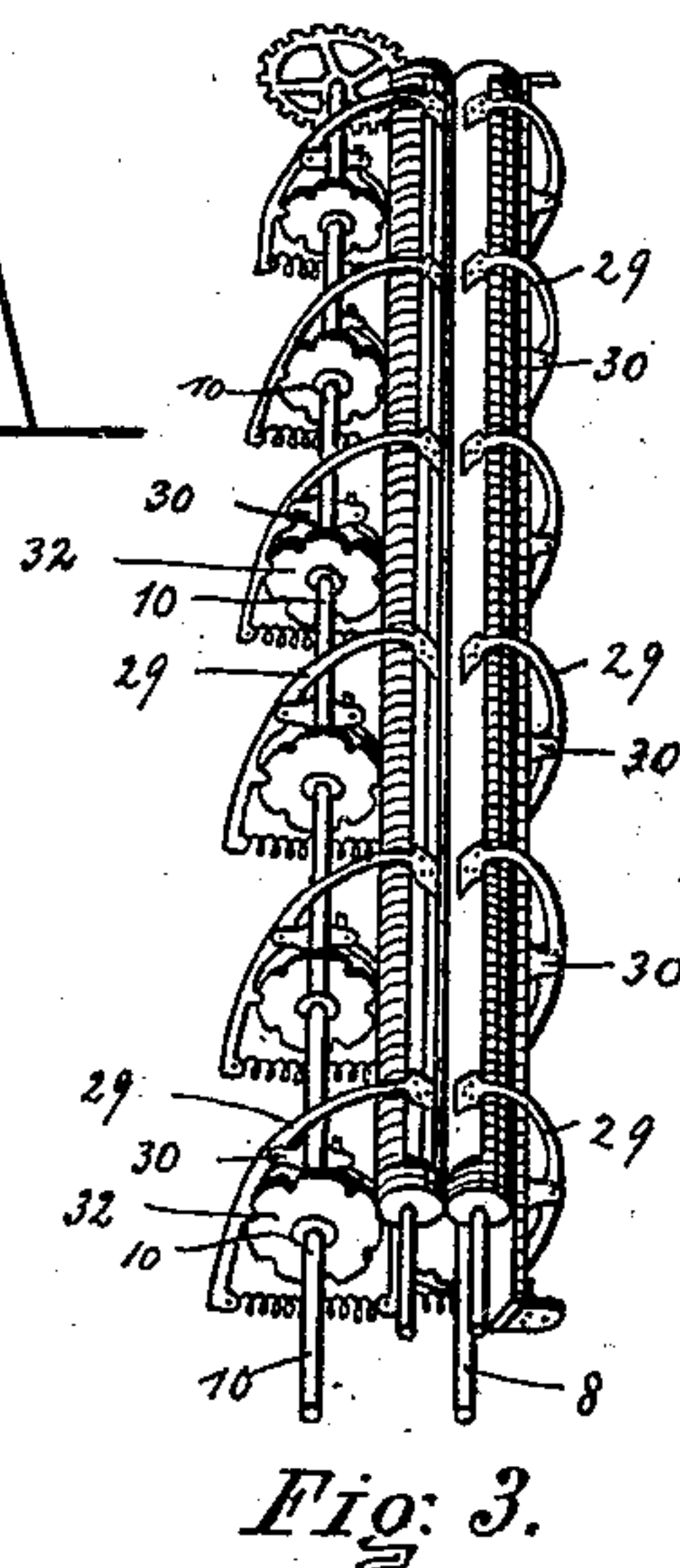


Fig. 3.

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(No Model.)

2 Sheets—Sheet 2.

C. C. GREEN.
HOP PICKING MACHINE.

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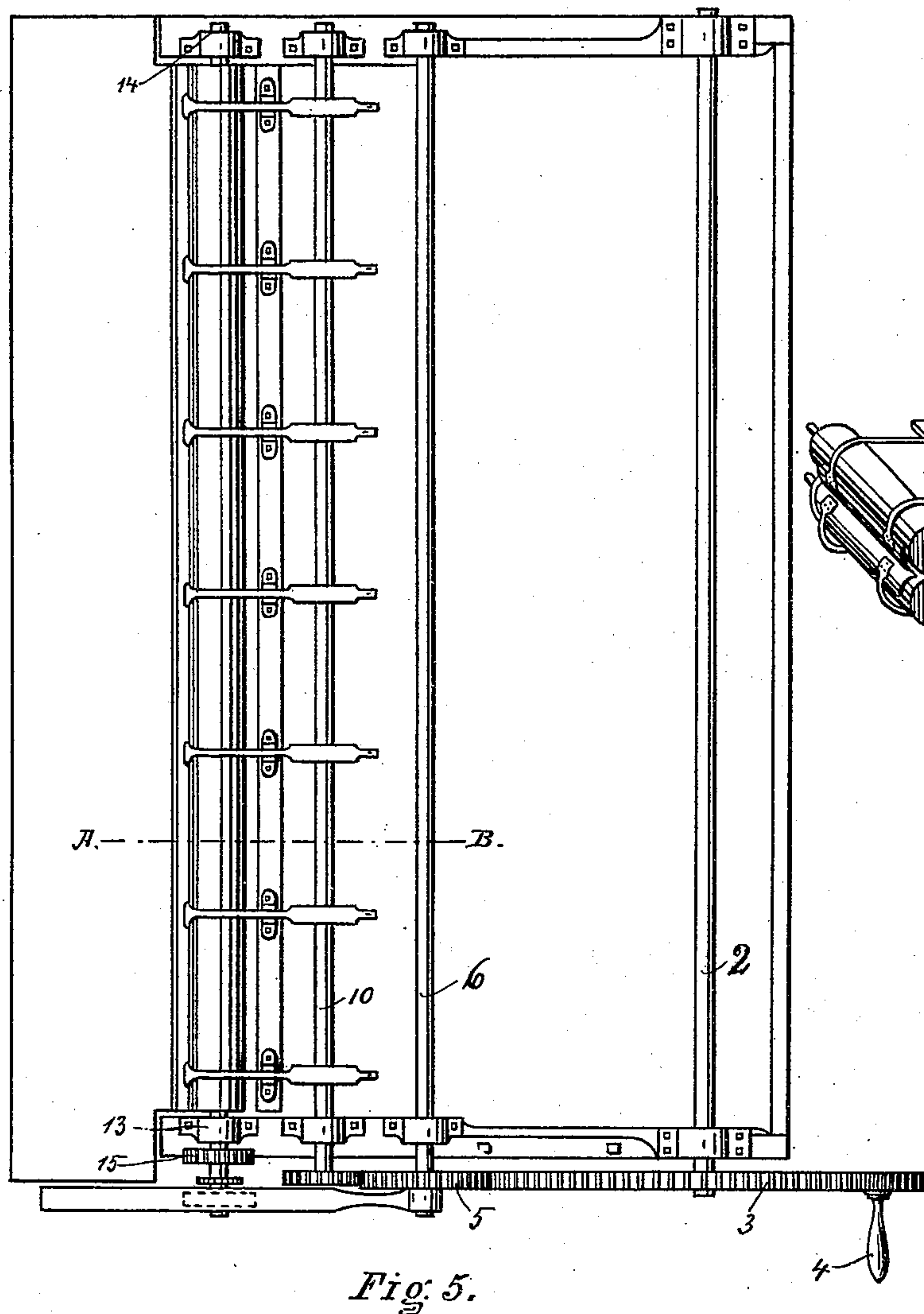


Fig. 5.

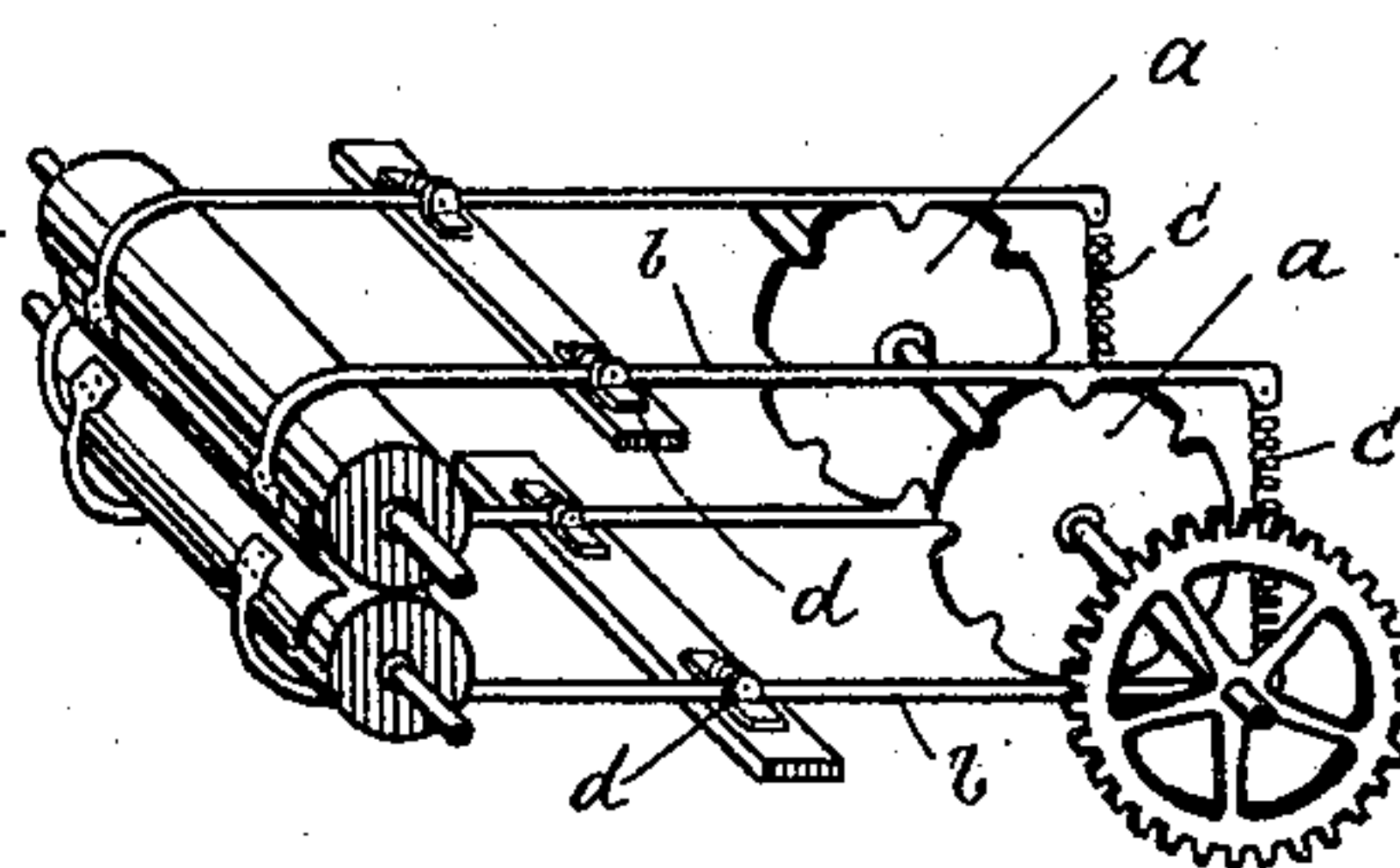


Fig. 6.

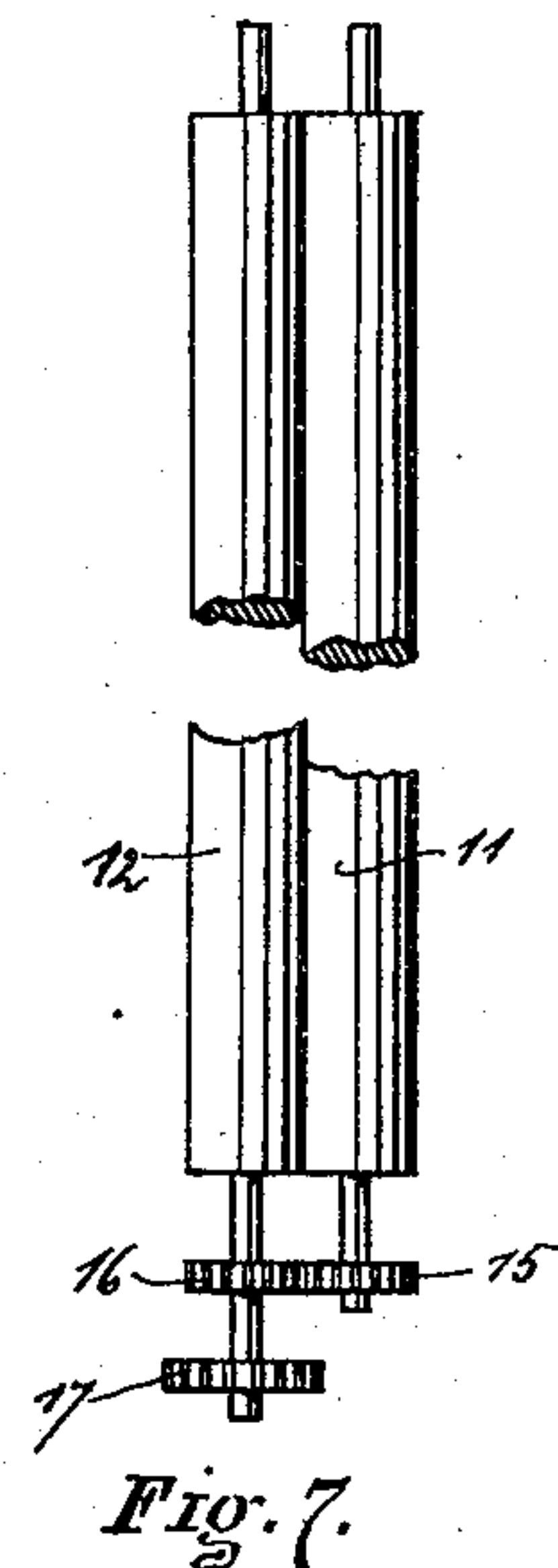


Fig. 7.

WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES CANDEE GREEN, OF UTICA, NEW YORK, ASSIGNOR TO MARTHA ELIZABETH GREEN, OF SAME PLACE.

HOP-PICKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 478,592, dated July 12, 1892.

Application filed September 9, 1891. Serial No. 405,238. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CANDEE GREEN, of Utica, in the county of Oneida and State of New York, have invented certain new and
5 useful Improvements in Hop-Picking Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to
10 make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form part of this specification.

My invention relates to an improvement in
15 machines for picking hops from the vine.

In the drawings which accompany and form part of this specification, and in which similar letters and figures of reference refer to corresponding parts in the several figures, Figure
20 1 shows an end elevation of my machine. Fig. 2 shows a partial section of the machine, taken on a line substantially with A B of Fig. 5. Fig. 3 shows in perspective the feed-rollers, picker-bars, pivoted levers, carrying the picker-bars,
25 and some of the operating mechanism removed from the machine proper. Fig. 4 shows in detail a dog, hereinafter more fully described. Fig. 5 is a plan view of the machine. Fig. 6 shows a modified form of construction
30 of the devices for operating the picker-bars. Fig. 7 shows the feed-rolls removed from the machine.

Referring more particularly to the reference-numerals marked on the drawings in a
35 more particular description of the device, 1 indicates a frame on which the working-bars of the machine are mounted and which carries shaft 2, journaled in suitable bearings, which shaft carries a drive-gear 3, provided
40 with suitable handle 4, or this wheel may be provided with band-wheel or other means for applying power to the machine. Likewise the band-wheel might be provided on some other portion of the shaft 2. Gear 3 engages
45 with gear 5, mounted on the shaft 6, also journaled in suitable bearings in the frame. Gear 5 engages with gear 7, which gear is mounted on the end of shaft 8. Gear 7 engages with gear 9, mounted on shaft 10, which shafts are
50 mounted in suitable bearings in the frame.

11 and 12 are the feeding-rollers, mounted

on shafts journaled in pairs of boxes 13 and 14 in the frame. On the shafts of rollers 11 and 12 are provided gears 15 and 16, which intermesh and cause the rollers to rotate simultaneously. On the outer end of the shaft
55 of roller 12 is provided a rotating gear 17, which is engaged by a tooth-rack 18, which tooth-rack is mounted on an adjustable wrist 19, 19 being mounted on sliding yoke 20, which
60 yoke is secured by set-screw or clasp or in any suitable manner on gear 5, the object being to place the wrist 19 closer or farther from the shaft 6, on which gear 5 is mounted. The free end of the rack 18 is adapted to engage
65 at a certain portion of the stroke with dog 21, which dog is pivoted at 22 on a slotted arm 23, the arm being secured to the machine by a set-screw or bolt 24. Also mounted on the set-screw or bolt 24 is a slotted stop-piece 25,
70 against which the dog 21 is held normally by spring 26 at its pivotal point.

At the front of the feed-rollers are provided a pair of concave picker-bars 27 and 28. The picker-bars are mounted on pivoted arms or
75 levers 29, as shown in Fig. 2, which levers are pivoted at 30. Arm 29 is also provided with rounded projection or tooth 31 on the opposite side of the pivotal point from the picker-bar, the tooth 31 being adapted to engage
80 with and be operated by disks 32, the disks 32 being mounted on shafts 8 and 10. The form of the disks 32 may be considerably changed, the object being to vibrate the picker-bars simultaneously or alternately, also,
85 in a greater or less degree. To the opposite end of the pivoted arms from that which carries the picker-bars is secured a spring 33, which spring is secured at its opposite end to a suitable support 34, therefor the spring
90 being provided to hold the lever arm or tooth 31 to the tripper-disk while it follows the irregular face during the revolution of the disk. At the front of the feed-rollers and projecting adjacent to the picker-bars is provided feed-
95 table 35.

In the modified form of construction shown in Fig. 6 there is a single tripper-disk *a* used in lieu of the two shown in other figures. The picker-bar, levers, or arms, as *b b*, engage on
100 the opposite sides of the disk *a*, and spring *c* for holding them to the tripper-disk spans the

space between the arms and is attached to each. The bars *b* are pivoted at *d*. The feed-rollers 11 and 12 are preferably covered with rubber or some yielding surface.

5 The operation of the device is substantially as follows: Power being applied to the machine, whereby the gear 3 is rotated in the direction shown by the arrow, the several parts
10 of the machine are put in operation and the vines carrying the hops to be picked are fed from the table 35 between the picker-bars and into the feed-rollers. As the gear 5 is rotated and at a certain point of the rotation the free
15 end of the rack 18 becomes engaged with the end of dog 21, and as the stroke continues and the dog swings on its pivot the teeth of the rack are thrown out of engagement with the teeth of the rack-wheel 17, and is so held
20 until the wrist 19 is passed somewhat below the line of shaft 6, when the teeth of the rack 18 becomes again engaged with the rack-wheel 17, and as the wrist 19 continues in its travel the rack drawing toward the right of
25 Fig. 1 rotates the feed-rollers to carry the vine into the machine, the amount that is carried in at each revolution depending on the distance of the wrist 19 from the shaft 6. At the same time that the foregoing described operation is taking place the picker-bars are
30 rapidly vibrated by the action of the picker-disks 32. The pivotal point of the arms carrying the picker-bars being above and below the horizontal line through the feed-rolls and behind the picker-bars produces a motion
35 which tends to draw the vines toward and into the feed-rolls as they close together after having opened to receive the vines, the hops being stripped from the vine as they are drawn against the picker-bars by the inward rotation
40 of the feed-rollers carrying the vines through. As the wrist-pin 19 passes above the center in the continuation of its revolution, the rollers 11 and 12 are given a slight rotation backward, so as to drive the vines out of
45 the machine, and after such slight movement backward the end of the rack becomes engaged with the dog 21 and is again thrown out, whereby the backward rotation of the feed-rollers is stopped, as before described.
50 At the same time the picker-bars are constantly opening and closing from above and below, which tends to shake the heretofore-picked hops from the vines and free the picker-bars from the hops that have already been
55 picked from the vines. The picked hops fall onto a receiver in the lower portion of the machine, passing between the upper end of the feeding-table and the picker-bars.

60 It is evident that many alterations and modifications in and from the construction described may be made without departing from the equivalents of my construction or the functions of the several elements of the machine.

65 What I claim as new, and desire to secure by Letters Patent, is—

1. In a hop-picking machine, the combina-

tion of a pair of feed-rollers, mechanism for giving the rollers an alternate backward and forward movement, a pair of picker-bars lo- 70 cated at the entrance to the feed-rollers, and mechanism for opening and closing the picker-bars on the vines fed into the rollers, substantially as set forth.

2. The combination, in a hop-picking ma- 75 chine, of a pair of feeding-rollers, a hop-engaging device located at the entrance to the feed-rollers, and mechanism for giving the rollers a forward and backward movement, substan- 80 tially as set forth.

3. The combination, in a hop-picking ma- 80 chine, of feed-rollers, a hop-engaging device located at the entrance to the feed-rollers, a pinion on the feed-roller shafts, a rack, a crank on which the rack is mounted, and a 85 dog for throwing the rack out of engagement with the pinion, substantially as set forth.

4. The combination, in a hop-picking ma- 90 chine, of a pair of feed-rollers, a hop-engaging device located at the entrance of the feed-rollers, a pinion attached to the feed-rollers, a rack adapted to engage the pinion, an ad- 95 justable crank on which the rack is mounted, and an adjustable dog for engaging the rack and throwing it out of engagement with the pinion, substantially as set forth.

5. In a hop-picking machine, the combina- 100 tion of a pair of feed-rollers, mechanism for operating the rollers, a pair of picker-bars mounted at the entrance of the rollers, piv- 105 oted lever-arms carrying the picker-bars and pivoted back of the feed-rollers, and mechanism for vibrating the arm, substantially as set forth.

6. The combination, in a hop-picking ma- 105 chine, of a pair of feed-rollers, concave picker-bars located at the entrance to the rollers, piv- 110 oted levers on which the picker-bars are mounted, and tripping devices for actuating the said levers and closing and separating the 115 picker-bars, substantially as set forth.

7. The combination, in a hop-picking ma- 110 chine, of a pair of feed-rollers, and a pair of concave picker-bars located at the entrance to the rollers, pivoted levers carrying the 115 picker-bars and pivoted to the rear of the rollers and above and below the horizontal line through the rollers, tripper-disks for closing the picker-bars together, and springs for hold- 120 ing the picker-arms to the pickers, substantially as set forth.

8. The combination, in a hop-picking ma- 125 chine, of the feed-rollers, the concave picker-bars located at the entrance to the feed rollers, the pivoted levers carrying the picker- 130 bars and pivoted to the rear of the feed-rollers, the rotating tripper-disks, and projection on the lever-arms for engaging the tripper-disks, and the spring for separating the picker-bars, substantially as set forth.

9. The combination, in a hop-picking ma- 130 chine, of feed-rollers, mechanism for intermittingly rotating the rollers, picker-bars located at the entrance to the rollers, and mechanism

for vibrating the picker-bars, substantially as set forth.

10. The combination, in a hop-picking machine, of the feed-rollers 11 and 12, the pinion 17, the rack 18, mounted on an adjustable crank, and the dog 21, adapted to engage the rack, substantially as set forth.

11. The combination, in a hop-picking machine, of the feed-rollers 11 and 12, pinion 17, rack 18, mounted on an adjustable crank, spring-actuated dog 21, mounted on an adjustable hanger, and an adjustable stop for the dog, substantially as set forth.

12. The combination, in a hop-picking machine, of a pair of feed-rollers, mechanism for rocking the rollers in feeding, and mechanism

for rocking the rollers out a less distance than the distance they fed in, and a hop-engaging device at the entrance to the feed-rollers, substantially as set forth.

13. The combination, in a hop-picking machine, of a pair of feed-rollers, mechanism for rotating the rollers ahead in feeding and rotating the rollers in a reverse direction a less distance in discharging the hops, and a hop engaging and picking device at the entrance to the rollers, substantially as set forth.

CHARLES CANDEE GREEN.

Witnesses:

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STEPHEN CORAM.