

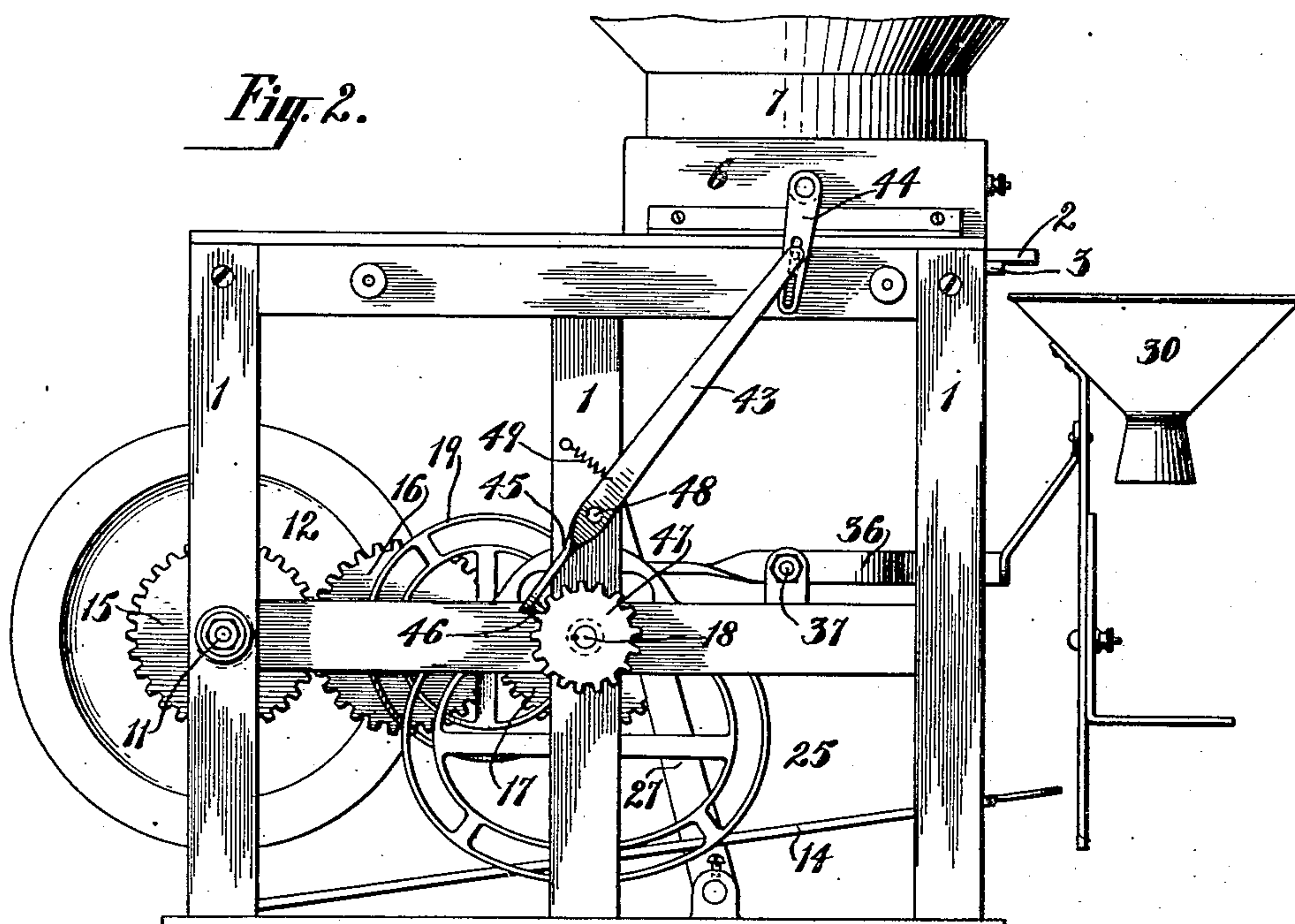
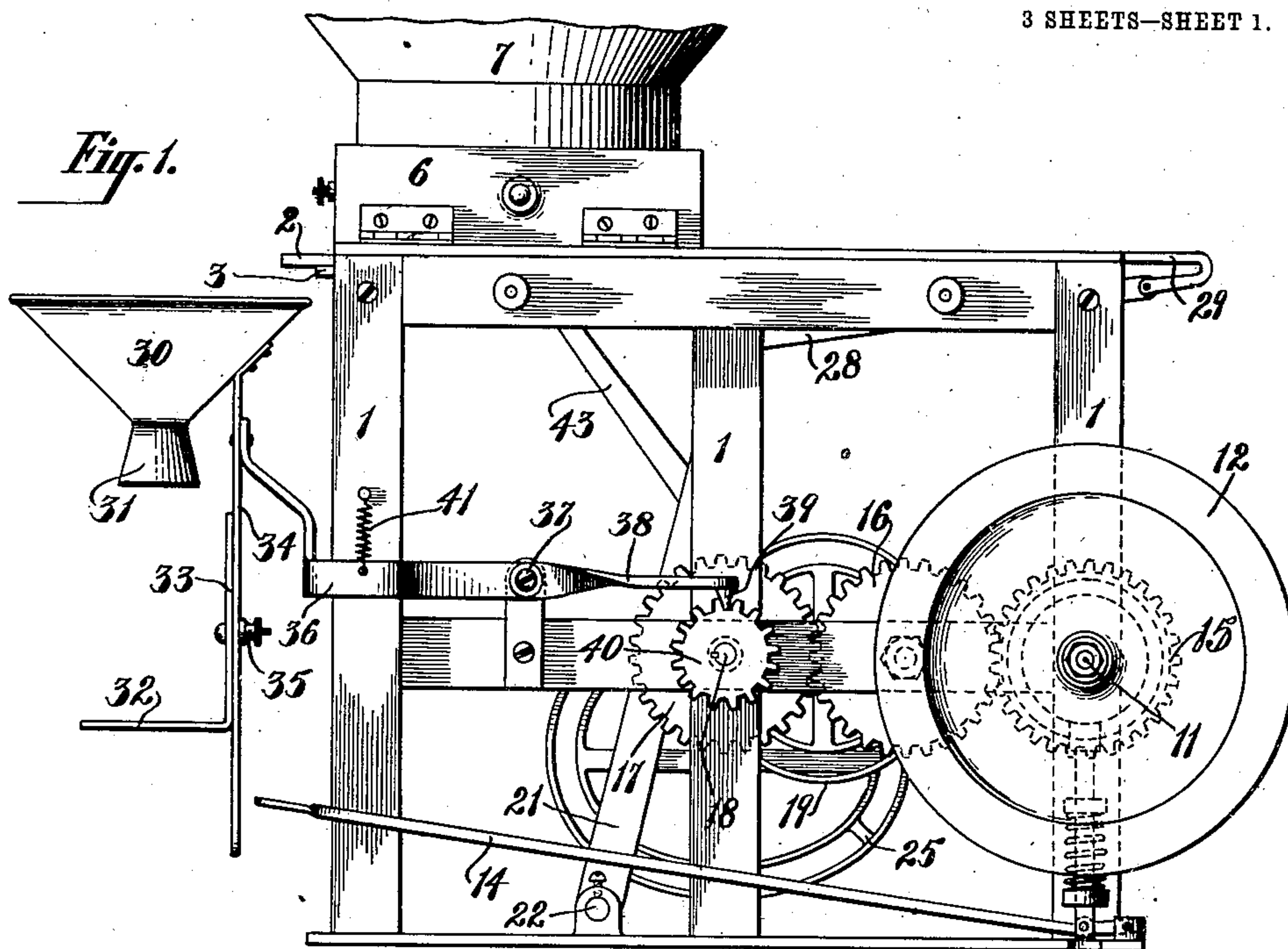
No. 824,463.

PATENTED JUNE 26, 1906.

J. W. & A. M. AYERS.
TABLET COUNTING AND FILLING MACHINE.

APPLICATION FILED SEPT. 29, 1904.

3 SHEETS—SHEET 1.



Witnesses:

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Henry Thine.*

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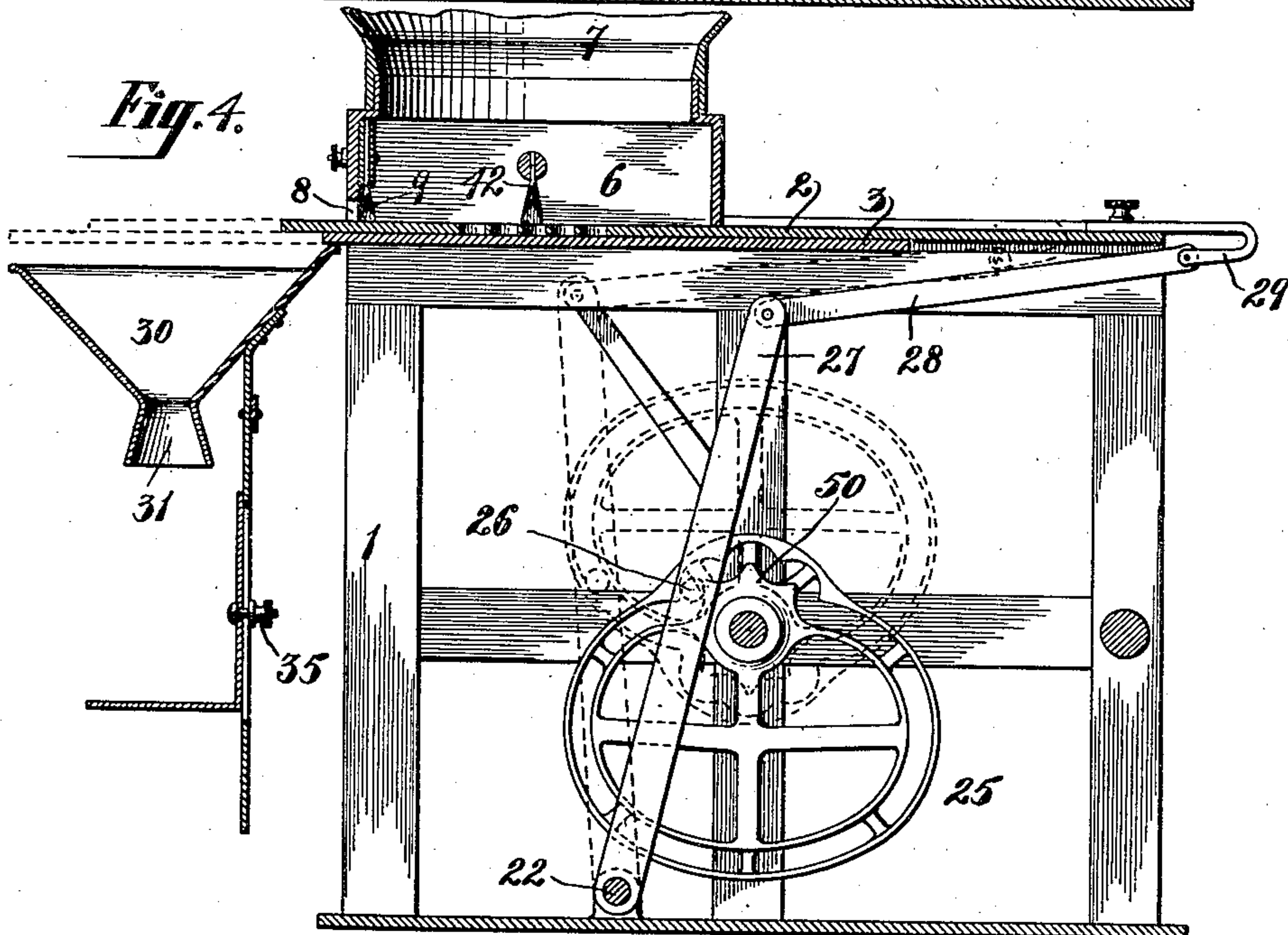
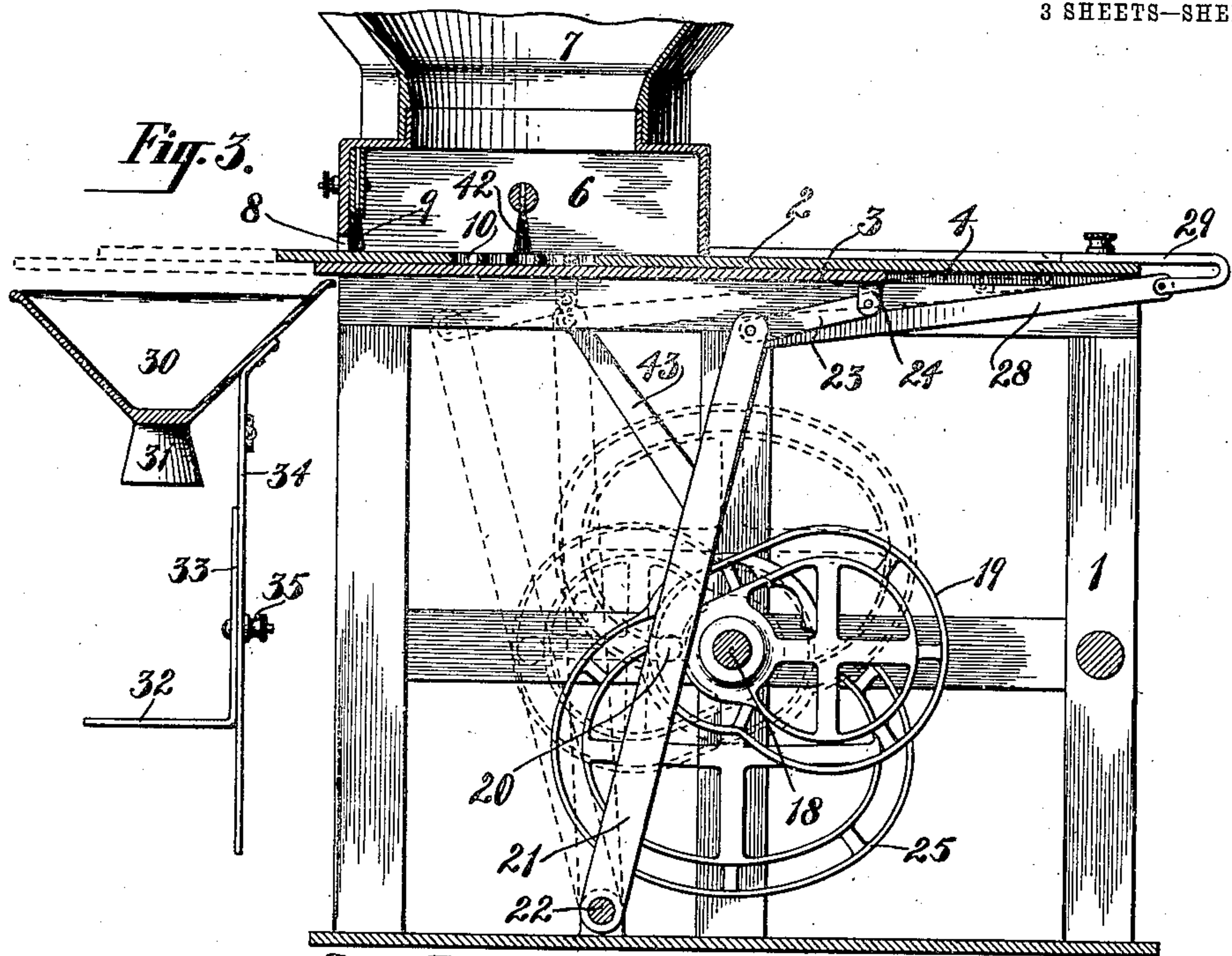
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Bernard Howard.*

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3 SHEETS—SHEET 2.



Witnesses:

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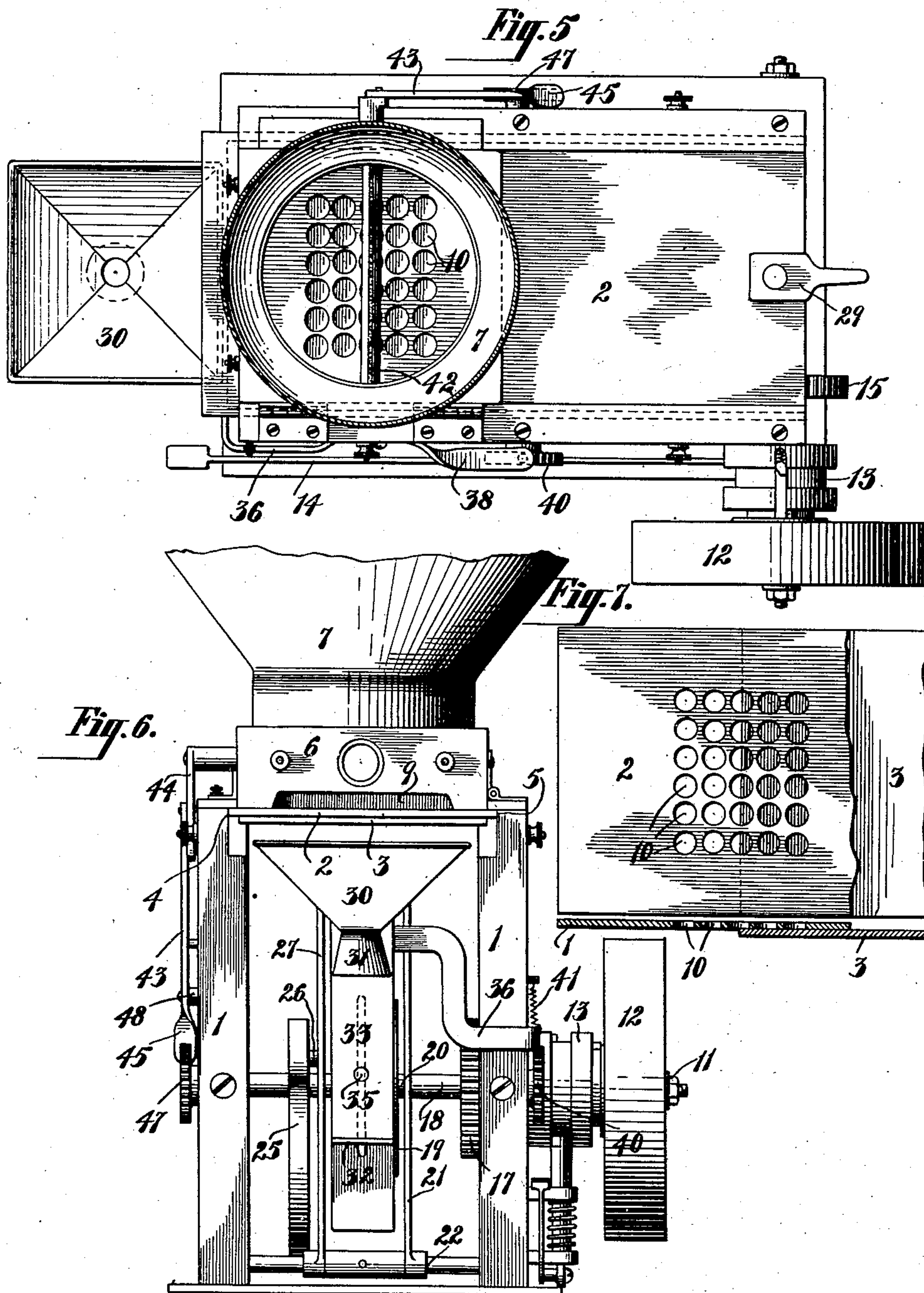
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JOHN W. AYERS AND ALBERT M. AYERS, OF NEW YORK, N. Y.

TABLET COUNTING AND FILLING MACHINE.

No. 824,463.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed September 29, 1904. Serial No. 226,522.

To all whom it may concern:

Be it known that we, JOHN W. AYERS and ALBERT M. AYERS, citizens of the United States, and residents of the borough of Brooklyn, in the city and State of New York, have invented an Improvement in Tablet Counting and Filling Machines, of which the following is a specification.

Our invention consists in certain improvements in the construction, form, and arrangement of the several parts of a machine for counting small articles—such, for instance, as tablets, pills, and the like—and feeding such articles to a point where they may be delivered into suitable receptacles.

A practical embodiment of our invention is represented in the accompanying drawings, in which—

Figure 1 represents the right-hand side of the machine. Fig. 2 represents the left-hand side of the machine. Fig. 3 represents a vertical longitudinal section through the machine in a plane adjacent to the right-hand side of the machine. Fig. 4 is a similar view in another plane. Fig. 5 is a top plan view of the machine. Fig. 6 is a front view, and Fig. 7 represents in detail a top plan and a longitudinal vertical section, of the article-delivery plates.

The machine-framing is denoted by 1 and is made of suitable form and construction to suit the requirements of the machine. The article-delivery plates are denoted by 2 and 3. The bottom plate 3 is fitted to slide horizontally to the front and rear in tracks 4 in the framing 1, which confine the side edges of the plate. The top plate 2 is also fitted to slide horizontally to the front and rear in tracks 5 in the said framing 1, which confine the side edges of the plate. A box 6 surmounts the framing 1 at the front of the machine, upon which box the article-reservoir 7 is mounted. The top plate 2 serves as a bottom for the box 6. The front of the box 45 along its bottom is provided with a transverse opening 8, and along the inside of the front of the box a brush 9 is secured, the bottom of which brush engages the face of the top plate 2.

The top plate 2 is provided with a series of holes 10 therein, which holes serve as pockets for receiving the articles to be delivered and retaining the articles therein so long as the bottom plate 3 closes the bottom of the said holes. The number of holes 10 corresponds to the number of articles to be delivered, and

the holes are preferably arranged in a series of transverse rows, as shown.

The main drive-shaft of the machine is denoted by 11, which shaft is provided with a driving-pulley 12, loosely mounted thereon. This pulley is fitted to be constantly driven from some source of power. (Not shown herein.) A clutch 13 of any well-known and approved construction is provided for throwing the driving-pulley 12 into driving engagement with the shaft 11 when it is desired to operate the machine. In the present instance we have shown a foot-lever 14 for controlling the operation of the clutch 13. The drive-shaft 11 is provided with a gear 15, which meshes with an intermediate idler-gear 16, which idler-gear in turn meshes with a gear 17 on the cam-shaft 18.

The bottom plate 3 is reciprocated at predetermined intervals by the following devices. A cam 19 is fixed to the shaft 18, which cam engages a stud or roller 20 on a rocking lever 21, hinged at its bottom to a support 22 and connected at its top through a link 23 to a lug 24, depending from the rear end of the bottom plate.

The top plate 2 is reciprocated at predetermined intervals by the following devices: A cam 25 is fixed to the shaft 18, which cam engages a stud 26, carried by a rocking lever 27, hinged at its lower end to the support 22 and connected at its upper end through a link 28 to a bracket 29, carried by the top plate.

The delivery-hopper is denoted by 30, which hopper is provided with a nozzle 31 for receiving the top of the receptacle which it is intended to fill.

32 denotes the bottom rest of an adjustable bracket, the upright 33 of which is secured to an arm 34, depending from the delivery-hopper 30. In the present instance a clamp device 35 is shown for securing the bracket in the desired position with respect to the nozzle 31 for bringing the mouth of the receptacle to the desired height into position within the nozzle 31. This hopper and vessel support is carried by the front arm 36 of a vibrating lever, pivoted at 37 upon the right-hand side of the framing 1. The rear arm 38 of the vibrating lever is provided with a tooth 39, which is engaged by a ratchet 40, fixed to the cam-shaft 18, so that as the cam-shaft is rotated the delivery-hopper and the vessel will be rapidly vibrated. A spring 41 extends from the framing 1 to the vibrating lever in position to yieldingly

hold the tooth 39 in engagement with the tooth of the ratchet 40.

A rocking brush 42 is hinged in the box 6, so that the bottom of the brush will engage the surface of the top plate 2. This brush extends transversely across the box 6 and is mounted in suitable bearings in the sides of the box. This brush is oscillated through a rocking lever, the upper arm 43 of which has a pin-and-slot engagement with the arm 44, fixed to the brush-shaft, the lower arm 45 of which lever is provided with a tooth 46, which is engaged by a ratchet 47, fixed to the cam-shaft 18. This rocking lever 43 is pivoted at 48 on the framing 1 at the left-hand side of the machine. A spring 49 leads from the framing to the rocking lever and exerts its tension in a direction tending to hold the tooth 46 in engagement with the ratchet 47.

The operation of the several parts of the machine is as follows: The vessel or receptacle for receiving the predetermined number of articles is placed upon the bottom rest 32, and the rest is then adjusted to bring the mouth of the vessel into the nozzle 31 of the delivery-hopper 30. The drive-shaft 11 is then connected to the pulley 12 by operating the clutch 13. The rotary movement of the drive-shaft will impart a rotary movement to the cam-shaft 18. The cams 19 and 25 are so shaped and arranged with respect to each other that the top and bottom plates will occupy the limit of their rearward movement for a short time together. During this time each of the holes 10 in the top plate receives an article from within the box 6—such, for instance, as a tablet or pill. To insure the filling of all of the holes 10, the cam 25 is provided with a zigzag portion 50 for engaging the stud 26 of the rocking lever 27 to impart to the lever, and thereby the top plate, a series of short reciprocations. The continued rotary movement of the cam-shaft 18 will cause the top and bottom plates to be moved forwardly until the portion of the top plate which contains the holes 10 with the articles therein is situated over the delivery-hopper 30. In the meantime the brush 42 has been rocked back and forth to insure the proper settling of the articles—as, for instance, the tablets within the holes 10. The cams 19 and 25 are so shaped that the further rotary movement of the cam-shaft will cause the cam 19 to withdraw the bottom plate, while the top plate remains stationary, thus permitting the articles within the holes 10 to be dropped row by row into the delivery-hopper 30. This prevents the articles from accumulating too rapidly in the hopper 30 and thus tending to become clogged in the nozzle 31. The further rotary movement of the cam-shaft 18 will cause the cam 25 to withdraw the top plate 2 into the original position from which the description of

the operation began. During the operation of the machine a vibratory motion is imparted to the delivery-hopper 30 and the vessel carried beneath the same for insuring the delivery of the articles from the hopper into the vessel.

The machine constructed, arranged, and operated as hereinabove set forth will accurately deliver to the vessel a predetermined number of articles, all liability of the articles becoming stuck being obviated because of the use of the devices described.

It is to be understood that any required number of articles may be fed by inserting top plates 2 having the desired number of holes therein for receiving the articles. Furthermore, it will be seen that the support for the vessel to be filled may be raised and lowered, so as to bring the mouth of the vessel into the desired position within the nozzle of the delivery-hopper. Furthermore, when the vessel is in position it will be seen that the vessel, as well as the hopper, is agitated and any danger of the vessel becoming displaced is entirely obviated.

The brush at the bottom of the front end of the box 6 serves to present a yielding resistance to the articles within the box as the top plate is moved to its forward position with its pockets over the delivery-hopper, thus preventing the marring of the articles within the box.

While the machine herein described is more particularly adapted for the counting and filling of tablets, it is to be understood that the machine may be used for the counting and filling of any of the articles which come in bulk and which are required to be counted and filled into different vessels.

It is evident that various changes might be resorted to in the construction, form, and arrangement of the several parts. Hence we do not wish to limit ourselves strictly to the structure herein set forth; but

What we claim as our invention is—

1. An article-reservoir, a top plate forming the bottom of the reservoir and having holes for receiving the articles therein, a bottom plate and means for moving the plates forward to a predetermined point, then moving the bottom plate rearward to release the articles and finally moving the top plate rearward to receive a new supply.

2. An article-reservoir, a top plate forming the bottom of the reservoir and having holes therein for receiving the articles, a bottom plate and means for imparting short reciprocatory movements to the top plate, then moving the plates forward to a predetermined point, then moving the bottom plate rearward to release the articles in the top plate and finally moving the top plate rearward to receive a new supply.

3. An article-reservoir, a top plate forming the bottom of the reservoir and having a plu-

5 reality of transverse rows of holes for receiving the articles therein, a bottom plate and means for moving the top and bottom plates forward to a predetermined point, then moving the bottom plate rearward to successively uncover the rows of holes in the top plate to release the articles therefrom and finally moving the top plate rearward to receive a new supply.

10 4. An article-reservoir, a top plate forming the bottom of the reservoir and having holes for receiving the articles therein, a bottom plate, rocking levers connected to the plates, a cam-shaft and cams thereon engaging the levers for moving the plates relatively to each other to deliver the articles at a predetermined point.

20 5. An article-reservoir, a top plate forming the bottom of the reservoir and having holes for receiving the articles therein, a bottom plate, rocking levers connected to the plates, a cam-shaft, a cam thereon engaging the top-plate lever and shaped to impart short reciprocatory movements to the lever and thereby the top plate and a cam engaging the bottom-plate lever, both of said cams being arranged to move the plates relatively to each other for delivering the articles at a predetermined point.

6. An article-reservoir, a top plate forming the bottom of the reservoir and having holes for receiving articles therein, a bottom plate, means for moving the plates relatively to each other for releasing the articles at a predetermined point and a reciprocating brush located within the reservoir in position to engage the surface of the top plate.

7. In an article counting and filling machine, an article-reservoir, an article-delivery hopper, a top plate forming the bottom of the reservoir and having holes for receiving the articles therein, a bottom plate, means for moving the plates forward to bring the holes in the top plate over the delivery-hopper, moving the bottom plate rearward to permit the articles to fall from the holes in the top plate into the hopper and finally moving the top plate rearward into position to receive a new supply of articles.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 19th day of August, 1904.

JOHN W. AYERS.
ALBERT M. AYERS.

Witnesses:

FREDK. HAYNES,
F. GEORGE BARRY