

No. 832,177.

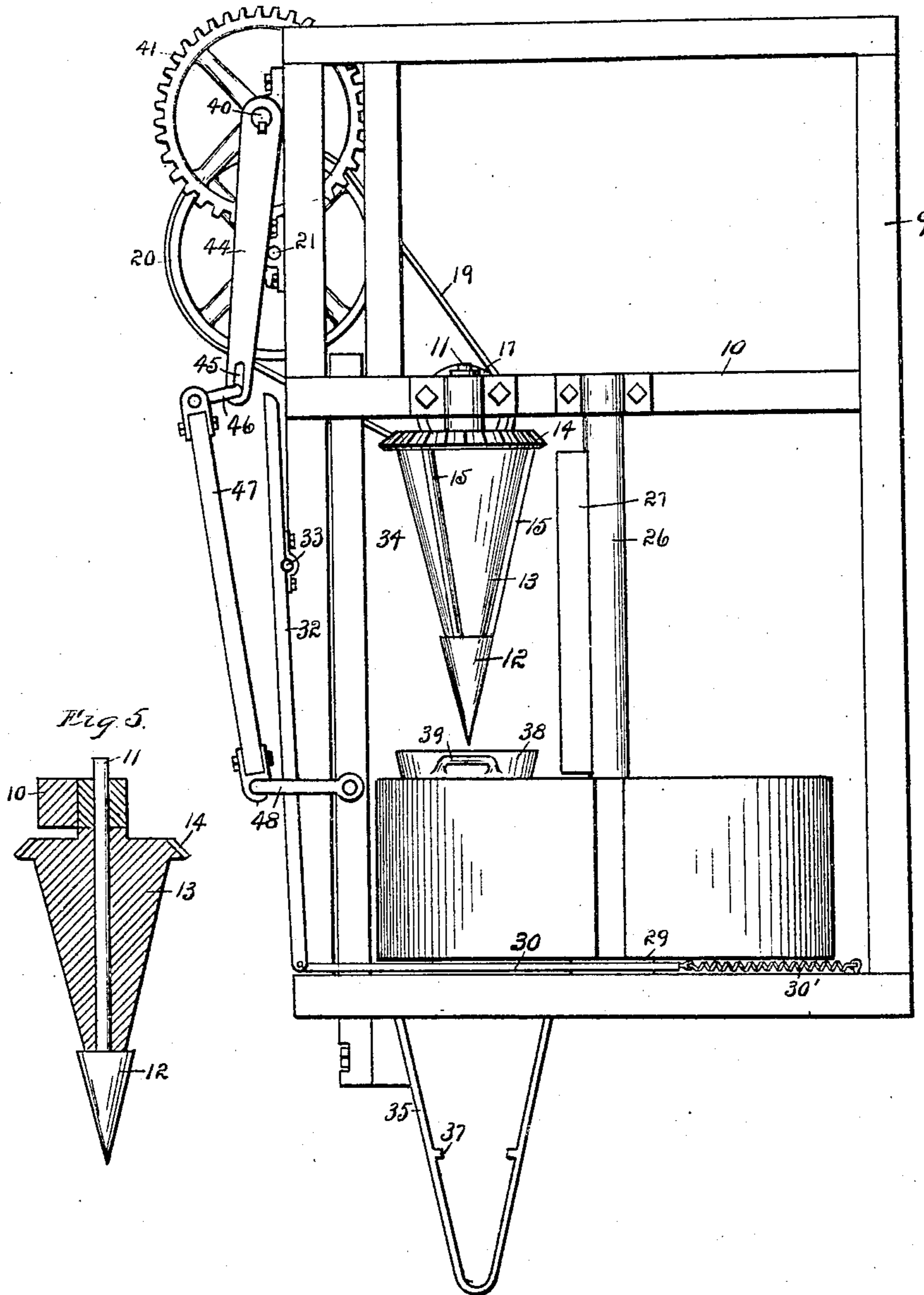
PATENTED OCT. 2, 1906.

L. E. VANATTA.
MACHINE FOR FORMING CLAY CONDENSERS.

APPLICATION FILED MAR. 31, 1906.

3 SHEETS—SHEET 1.

Fig 1.



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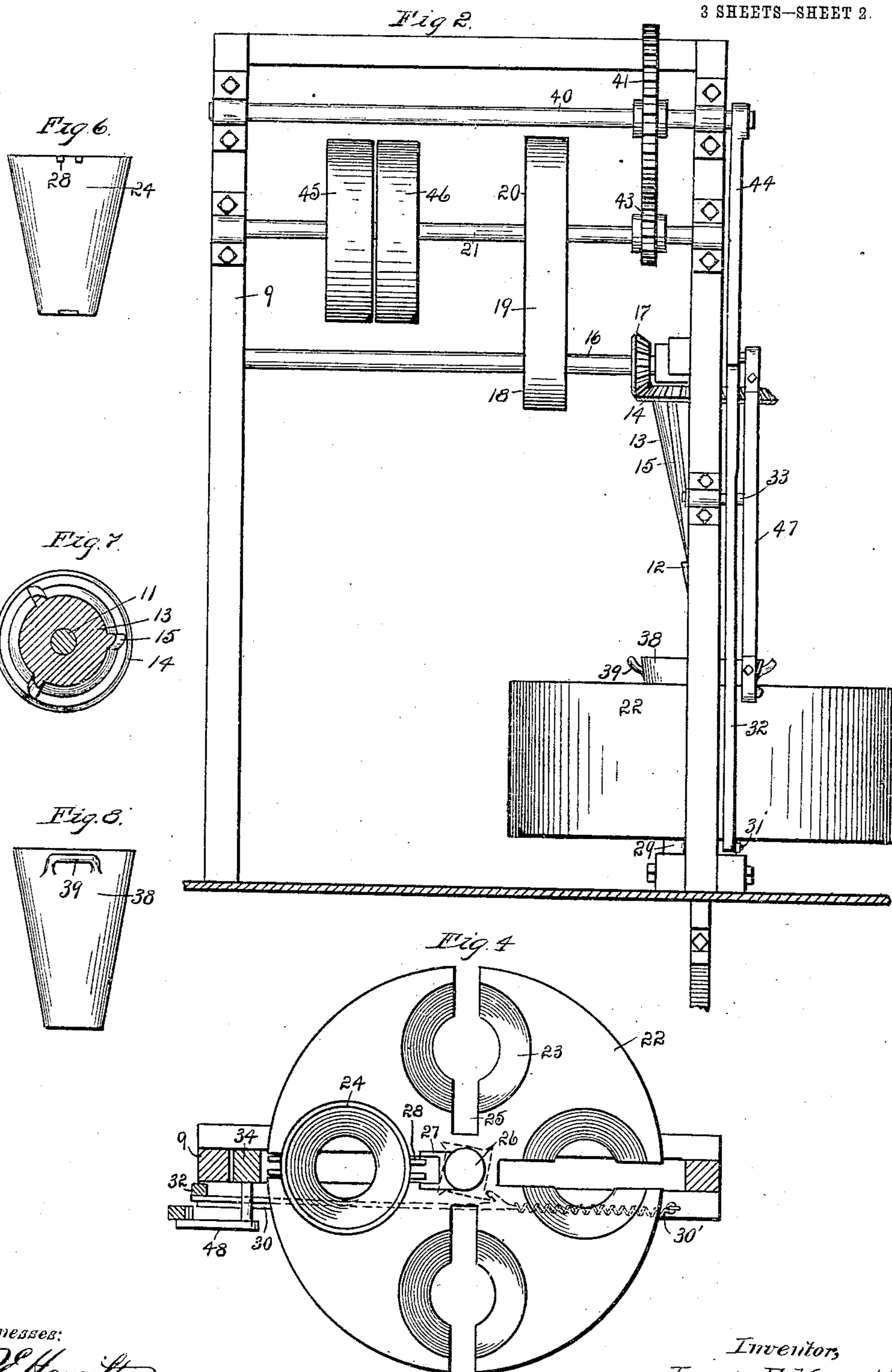
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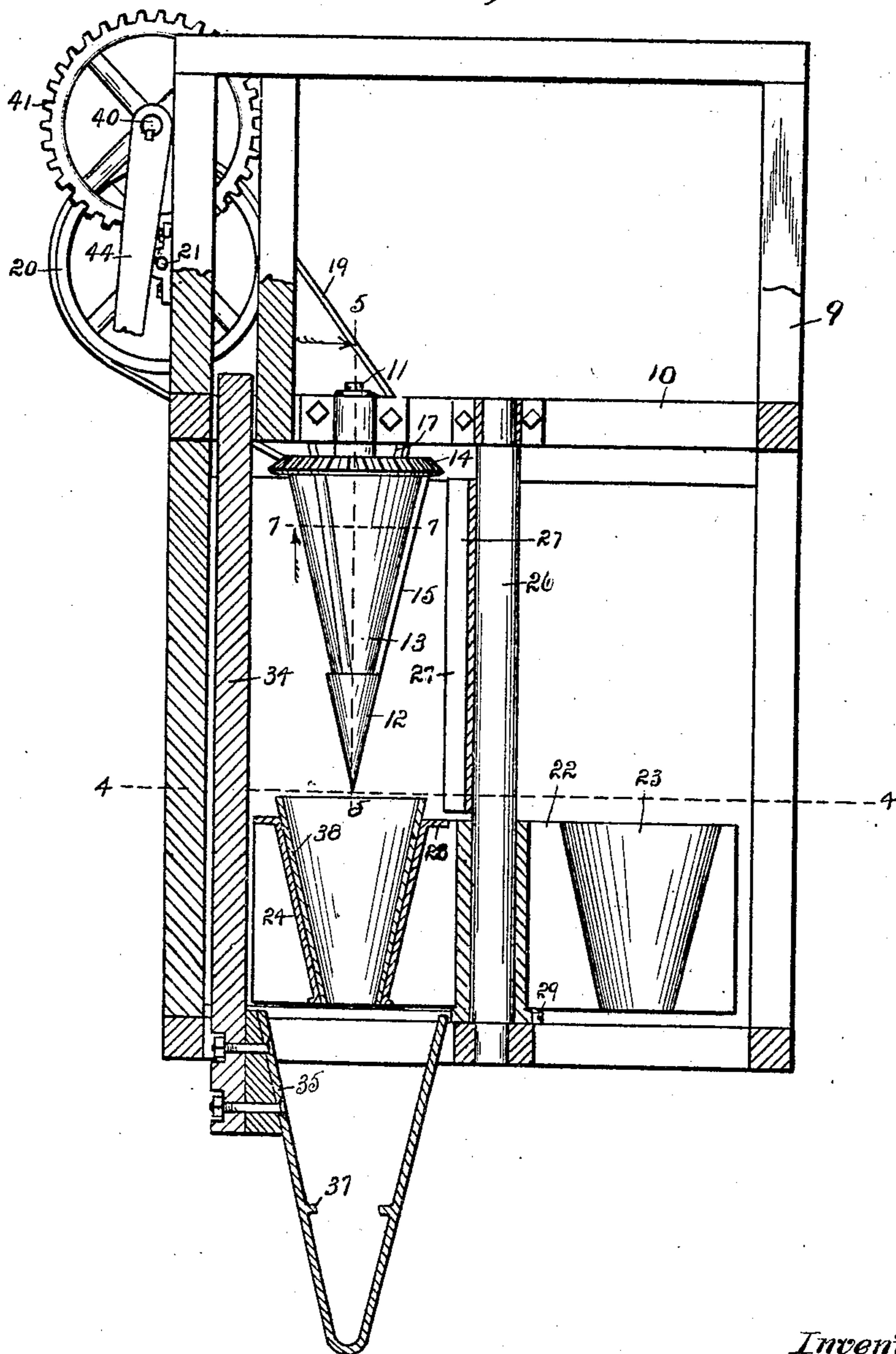
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3 SHEETS—SHEET 3.

Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

LEWIS E. VANATTA, OF IOLA, KANSAS.

MACHINE FOR FORMING CLAY CONDENSERS.

No. 832,177.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed March 31, 1906. Serial No. 309,076.

To all whom it may concern:

Be it known that I, LEWIS E. VANATTA, a citizen of the United States, residing at Iola, in the county of Allen and State of Kansas, have invented certain new and useful Improvements in Machines for Forming Clay Condensers; 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 figures of reference marked thereon, which form a part of this specification.

My present invention relates to a machine for forming clay condensers for use in smelting zinc and like ores, and has for its object to provide a device of the class described which is simple and economical in construction and operation and which will embody the improved details of structure which will presently be fully described, and pointed out in the claims, reference being had to the accompanying drawings, forming part of this specification, in which like reference-numerals refer to like parts throughout the several views, and in which—

Figure 1 is a front view of a device constructed according to my invention. Fig. 2 is a side elevation of same. Fig. 3 is a front view, partly in central vertical section. Fig. 4 is a plan view taken on the line 4 4, Fig. 3. Fig. 5 is a central vertical section of the plunger. Fig. 6 is an elevation of one of the buckets adapted to fit in the pockets in the table, illustrated in plan in Fig. 4. Fig. 7 is a cross-section of the plunger, taken on the line 7 7, Fig. 3. Fig. 8 is a detail view of one of the molds.

Condensers of this class have usually been constructed by placing a roll of fire-clay in a mold and striking a solid plunger through the center of the roll. It has been found that when employing this method the clay will adhere to the plunger and be lifted from the mold as the plunger is raised. I have found that with a plunger having a stationary point and a revolving upper portion against which the mold containing the clay roll is raised a more perfect condenser may be formed in a shorter time than under the old method, and the device which I claim as my invention is constructed along that line.

Referring more in detail to the parts, 9 represents the main frame, in which the parts are mounted. On frame 9 is a cross-brace

10, in which is rigidly secured the depending shaft 11. On the lower end of shaft 11 is a conical head 12, and loosely mounted on said shaft is a revolving member 13, which rests on head 12 and has a beveled gear-wheel 14 rigidly secured on its upper rim. The lower end of member 13 is of less diameter than head 12; but said member is provided with wings 15, the bases of which extend outwardly to alinement with said head and are beveled at one edge to meet the periphery of member 13, there being a suitable number of said wings arranged, preferably, at regular intervals around the member.

Suitably mounted in frame 9 is a shaft 16, carrying a beveled pinion 17, adapted to mesh with gear 14, and on said shaft is a pulley 18, over which is run a belt 19, which belt is connected with a driving-pulley 20 on the main drive-shaft 21, which is also journaled in the main frame. Revolvably mounted in the bottom of the frame is a table 22, having a series of pockets 23 therein, adapted to receive buckets 24 and having slots 25, which extend through the center of each of said pockets.

Table 22 revolves around a central post 26, which is supported in the bottom of frame 9 and is secured to cross-brace 10, and projecting from said post is a channel-beam 27, between which one of the forks 28, which projects from each side of the bucket 24, is adapted to fit. On the bottom of the table is secured a ratchet 29, and extending inwardly from the side of the frame is an arm 30 of the table-operating lever, said arm having a pawl 31 thereon adapted to engage the teeth of ratchet 29. Pivoted to arm 30 is the upright lever-arm 32, which is fulcrumed at 33 to the frame. 30' is a compression-spring for drawing the table-operating lever back to its original position after it has been tripped.

Sliding in vertical guides in the main frame is a beam 34, carrying on its lower end a bracket 35, adapted to be raised through the slots 25 in the table to engage the bucket 24, said bracket comprising side arms which fit between the forks 27 of the bucket when raised and having lugs 37, which engage the bottom of the bucket and by which the latter is lifted when the sliding beam is operated.

Fitting within buckets 24 are the molds 38, which are provided with handles 39, by which they are lifted into and out of buckets 24 and by which they are carried. Journaled in the main frame above the drive-

shaft is a third shaft 40, on which is keyed a spur-wheel 41, which engages a spur-wheel 43 on the drive-shaft, and keyed to the end of said shaft 40 is an arm 44, in the loose end of which is a slot 45, in which slot is slidably mounted one end of a link 46, the opposite end of which is pivoted to a pitman 47, which pitman extends downwardly and has pivoted at its lower end one end of a link 48, the opposite end of which is pivotally mounted on the sliding beam 34.

On the drive-shaft 21 are mounted the customary tight and loose pulleys 45 and 46, which may be suitably connected with the motive power, which is not shown.

When in use, the table-pockets are provided with the buckets and molds, in which latter fire-clay rolls have been placed. The driving mechanism being started in operation, the shaft 16 is revolved by means of its connection with the drive-shaft, causing the revolution of the plunger. Through its connection with the drive-shaft shaft 40 is also revolved, carrying arm 44 around in its circle. As soon as arm 44 is placed in motion it engages the lever-arm 32, rocking same on its fulcrum and drawing the lower arm 30 backwardly, causing the pawl which it carries to engage the ratchet 29 and revolving table 22 until one of the pockets in the table is directly beneath the plunger. As arm 44 continues its travel the pitman and link connection causes beam 34 to be raised, elevating bracket 35 into engagement with the bucket in the table, which is directly beneath the plunger. Further travel of the arm and its connecting parts causes the bucket to be raised, bringing the clay in the mold against the plunger-point, forcing the same upwardly, causing the plunger to travel through the clay and pressing the latter into a hollow cone shape, the bucket being held in correct alinement by the guide 27 on post 26. The stationary point on the plunger holds the clay firmly in the mold, while the revolving body acts as a drill to facilitate its passage through the roll, a suitable lubricant being fed in between the wings 15 to further facilitate the action and to keep the clay from adhering to the plunger. When the mold has been raised until the plunger-point has passed through the clay and through the bottom of the mold, the arm 44 will have passed its upper center and commence the downward movement, forcing the sliding bar 34 downwardly and lowering the bucket and mold away from the plunger until the bucket again rests in the pocket in the table from which it was lifted. The arm 44 continues to revolve and again engages lever 32, which has been retracted by spring 30', revolving table 22, carrying the bucket and mold containing the formed condenser to one side and bringing a bucket carrying a mold containing a fresh clay roll into the operative posi-

tion with relation to the plunger, and the operation described is repeated. While this fresh roll is being formed, an attendant lifts the mold containing the formed condenser out of its bucket and bears it off. Another mold is then placed in the bucket, so that by the time the table has completed a complete revolution the table-pocket which contained the first bucket is again in position beneath the plunger and carrying a mold with a fresh clay roll.

While I have shown and described a specific mechanism for operating the table and bracket, other mechanism may be provided for the same purpose, and a different style of lifting bar and bracket may be provided for performing the function of those parts.

I claim—

1. In a device of the class described, a plunger comprising a stationary head, a revoluble body, and means for revolving said body.

2. In a device of the class described, a suitable plunger, a mold-table, a mold-supporting bucket carried in said table, a mold seated in said bucket, and means for elevating said bucket to bring said mold into operative relation to said plunger.

3. In a device of the class described, a plunger comprising a stationary head, and a revoluble body, and beveled wings carried on said body.

4. In a device of the class described, a plunger comprising a head rigid on a suitable shaft, a revoluble body carried by said shaft in operative relation to said head, and means for revolving said member.

5. In a device of the class described, a suitable frame, a shaft rigid on said frame, a plunger-head rigid on said shaft, a plunger-body loose on said shaft, a gear-wheel integral with said body, and means operating said gear-wheel for revolving said body.

6. In a device of the class described, a suitable frame, a shaft rigid on said frame, a plunger-head rigid on said shaft, a plunger-body loose on said shaft, beveled wings on said body, and means for revolving said body.

7. In a device of the class described, a suitable frame, a plunger, a bucket having forked side brackets, and a lifting-bracket adapted to engage said bucket substantially as set forth.

8. In a device of the class described, a suitable frame, a plunger carried by said frame, a bucket having forked lugs extending from its sides, a mold carried in said bucket, a U-shaped bracket adapted to engage said bucket with its arms projecting through said forked lugs, and means for operating said bracket.

9. In a device of the class described, a suitable frame, a plunger carried by said frame, a revoluble table, molds carried by said table and means for raising said molds from said table into operative relation with said plunger.

10. In a device of the class described, a

suitable frame, a plunger carried by said frame, a table having pockets therein, molds carried in said pockets, and means for raising said molds into operative relation with said plunger.

11. In a device of the class described, a suitable frame, a plunger carried by said frame, a table having pockets therein, molds carried in said pockets, means for raising said molds into operative relation with said plunger, and means for guiding said molds in their travel.

12. In a device of the class described, a suitable frame, a plunger carried by said frame, a table having pockets therein, a standard extending upwardly from said table and having a vertical groove therein, buckets carried in said pockets, molds carried in said buckets, means for elevating said buckets, and lugs on said buckets adapted to travel in the vertical groove, substantially as set forth.

13. In a device of the class described, a suitable frame, a plunger carried by said frame, a revoluble table having pockets and lateral grooves therein, buckets carried in said pockets and having lugs adapted to fit in said grooves, a bracket adapted to be raised through the grooves in said table and engage said buckets, means for revolving said table, and means for raising said bracket.

14. In a device of the class described, a suitable frame, a revoluble table having an upwardly-extending post, molds carried by said table, means for elevating said molds, and means on said post for guiding said molds in their upward travel.

15. In a device of the class described, a suitable frame, a revoluble table, buckets carried by said table, lugs extending laterally from said buckets, a vertical post on said table, a channeled guide on said post, and means for raising said buckets, for the purpose set forth.

16. In a device of the class described, the

combination with a plunger and mold-buckets, a revoluble shaft, an arm rigid on said shaft, a sliding beam carrying a bracket adapted for engagement with said buckets, and a pitman having a link connection with said arm and said beam.

17. In a device of the class described, the combination with a plunger and mold buckets, of a revoluble arm having a slot in its loose end, a sliding beam, a bracket on said beam adapted for engagement with said buckets, a pitman having at one end a link connection with said beam, a link pivoted to the other end of said pitman and having a sliding connection with said arm, and means for operating said arm.

18. In a device of the class described, the combination with a revoluble mold-carrying table and suitable plunger, of a sliding beam carrying a mold-lifting bracket, a revoluble arm, means operated by said arm for sliding said beam, a ratchet on said table, a lever-arm carrying a pawl adapted for engagement with said ratchet, and a lever connected with said lever-arm and having its loose end in the path of said revoluble arm, for the purpose set forth.

19. In a device of the class described, the combination with a revoluble mold-carrying table and suitable plunger, of a sliding beam, carrying a mold-lifting bracket, a revoluble arm, a connection between said arm and said beam, a ratchet on said table, a lever fulcrumed adjacent to said table and carrying a pawl adapted for engagement with said ratchet, means for rocking said lever, and means for retracting said lever, for the purpose set forth.

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

LEWIS E. VANATTA.

Witnesses:

J. H. HENDERSON,
ALICE MCGOWAN.