

Feb. 26, 1924.

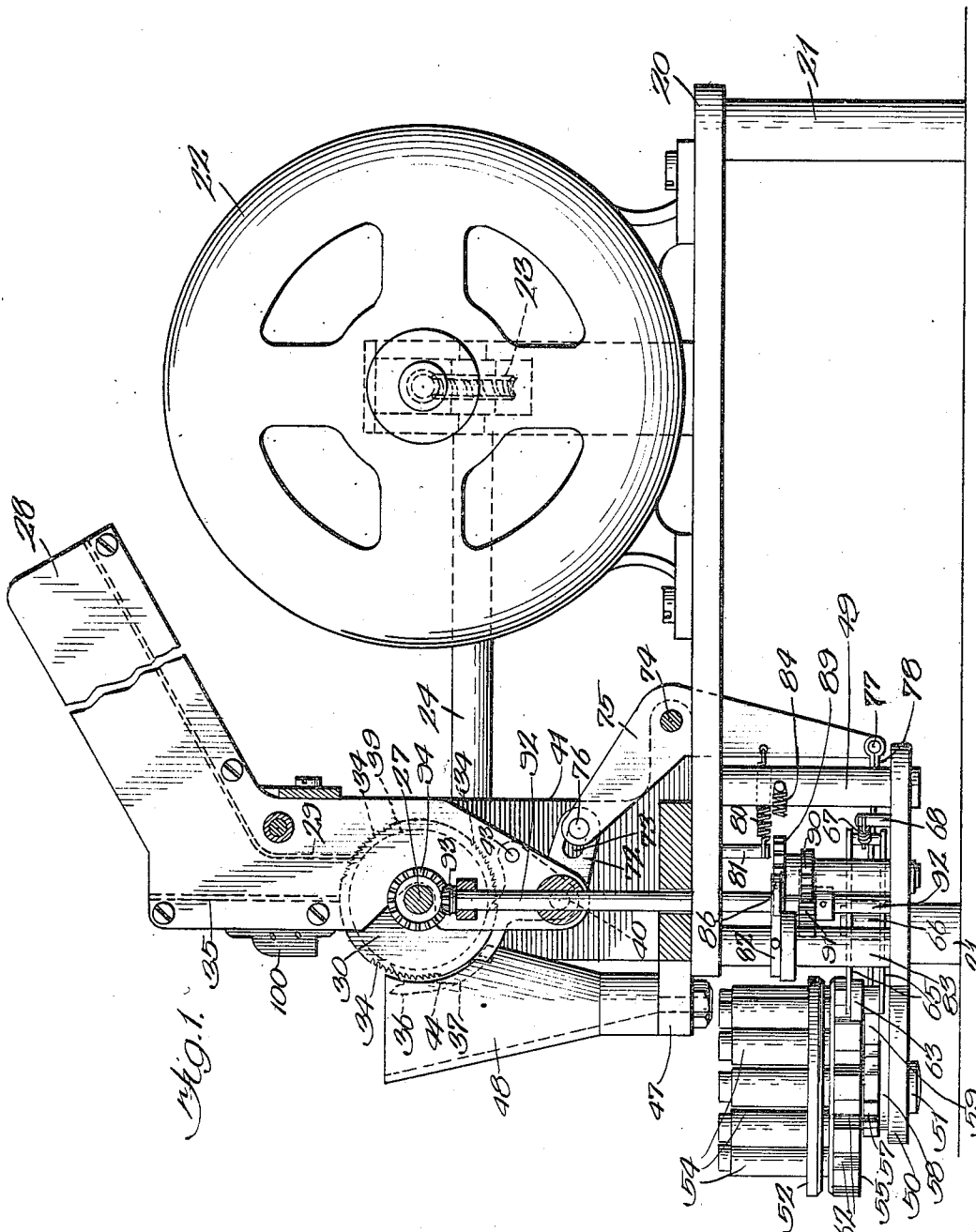
1,485,099

J. C. WAHL

LEAD LOADING MACHINE

Filed May 6, 1918

5 Sheets-Sheet 1



Inventor:
John C. Wahl.
By Arthur F. Hook
Atty.

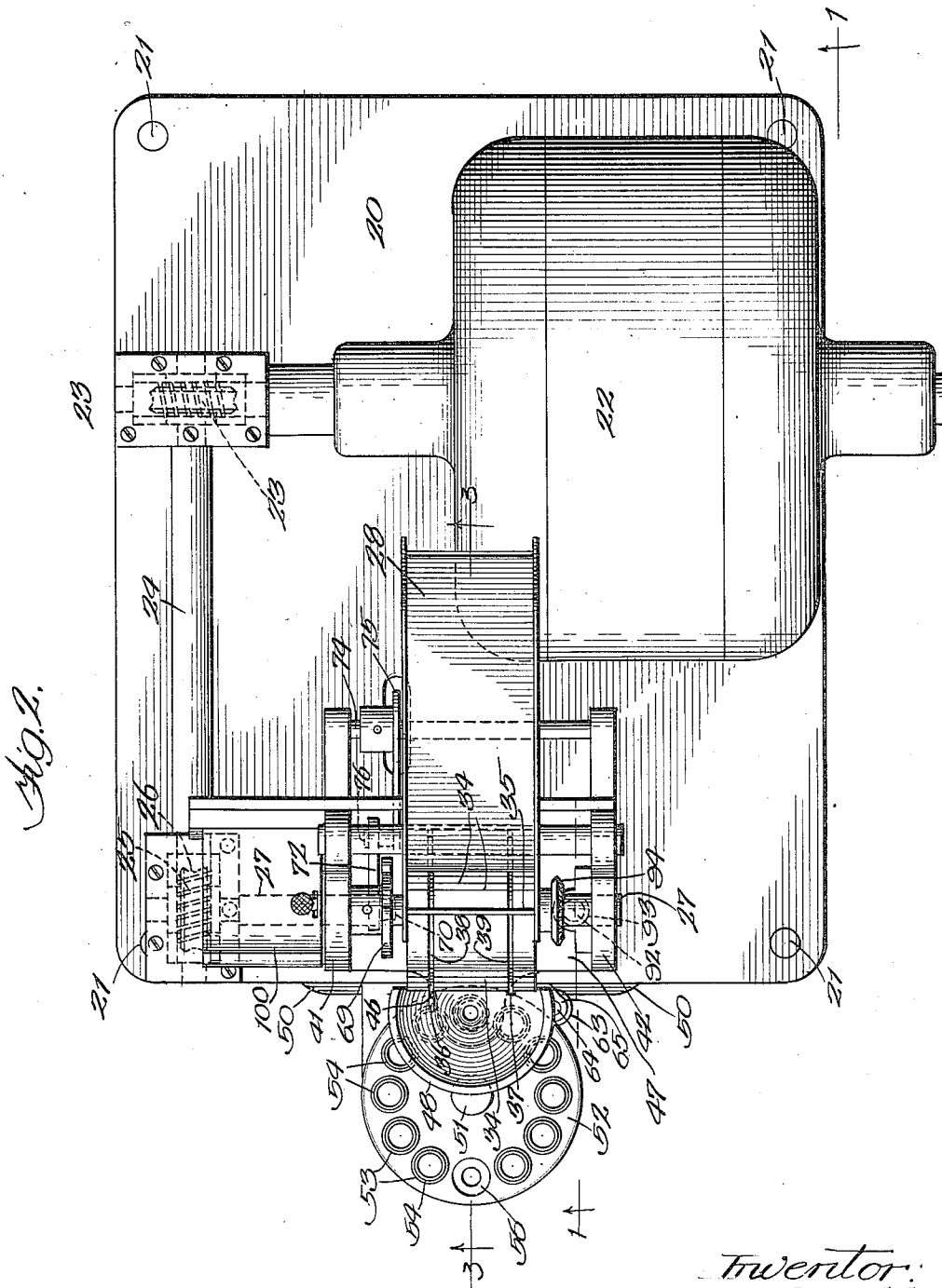
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5 Sheets-Sheet 2



Inventor:
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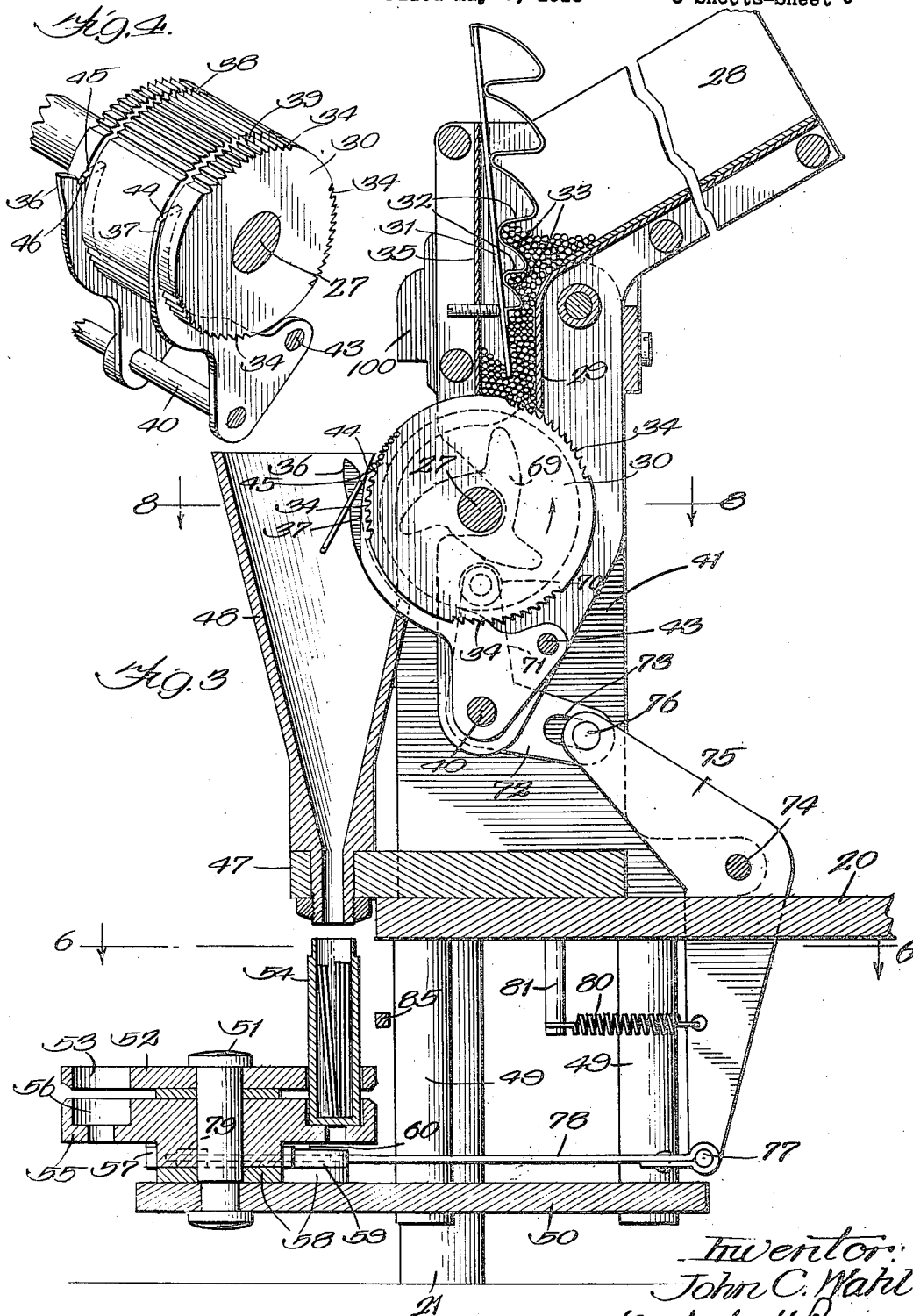
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J. C. WAHL

LEAD LOADING MACHINE

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Feb. 26 , 1924.

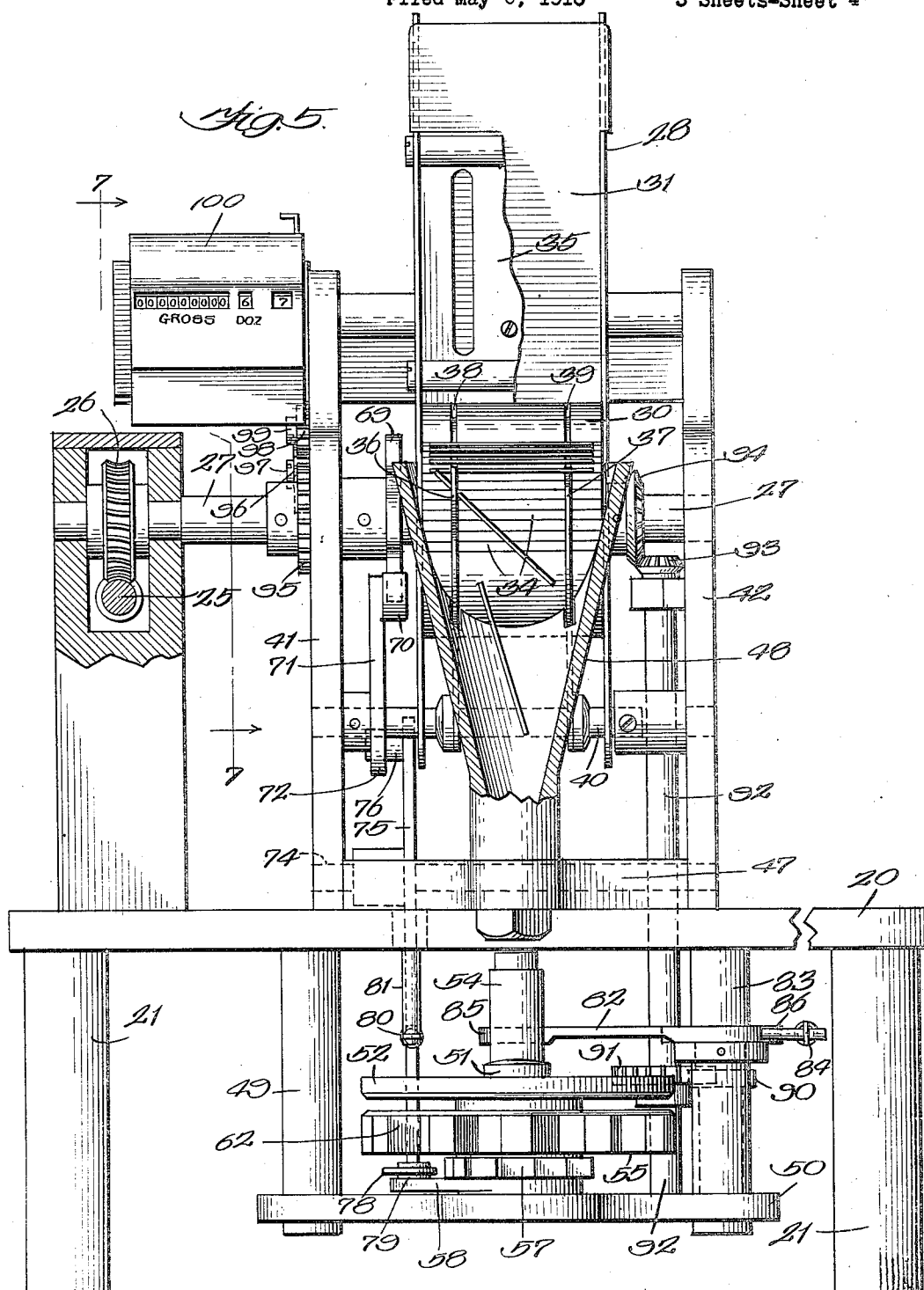
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LEAD LOADING MACHINE

Filed May 6, 1918

5 Sheets-Sheet 4



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1,485,099

LEAD LOADING MACHINE

Filed May 6, 1918

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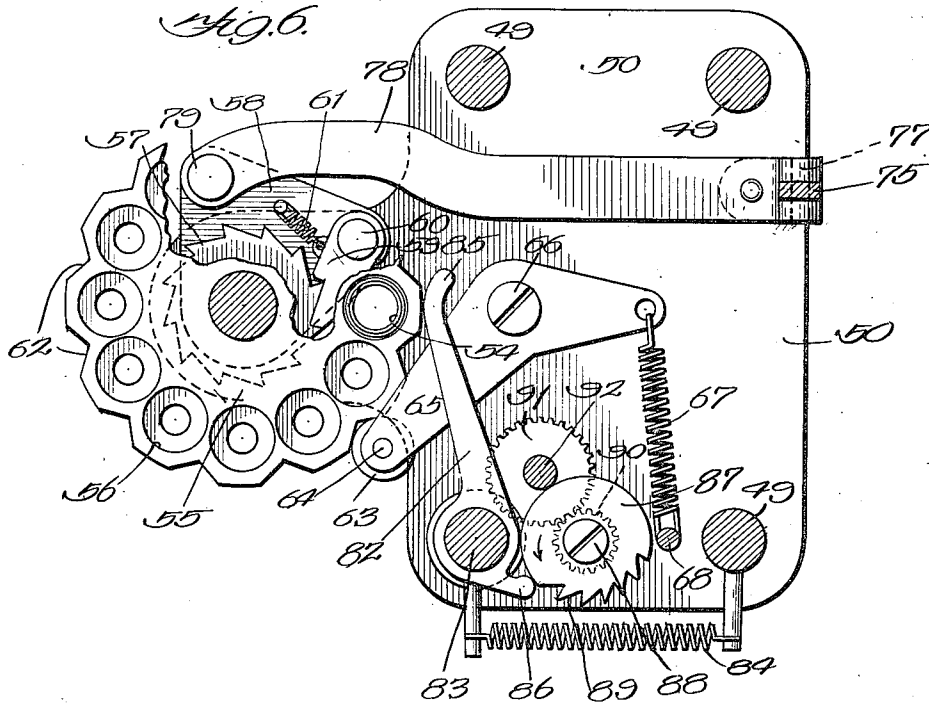


Fig. 7.

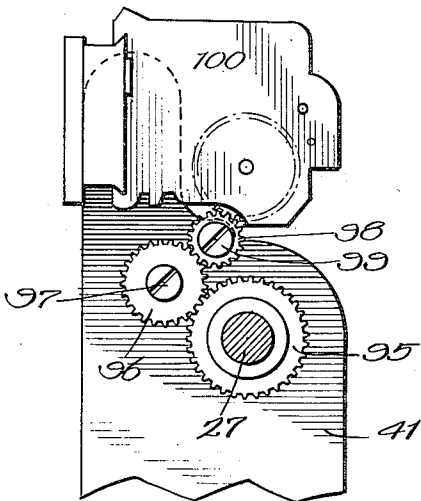
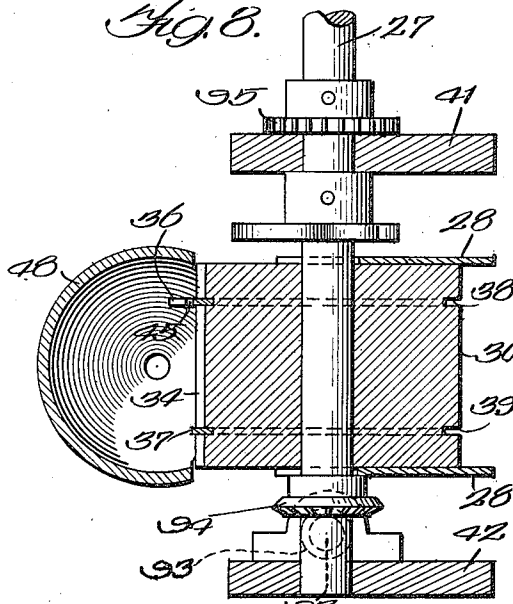


Fig. 8.



Inventor:
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Patented Feb. 26, 1924.

1,485,099

UNITED STATES PATENT OFFICE.

JOHN C. WAHL, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WAHL COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

LEAD-LOADING MACHINE.

Application filed May 6, 1918. Serial No. 232,990.

To all whom it may concern:

Be it known that I, JOHN C. WAHL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lead-Loading Machines, of which the following is a specification.

My invention is a machine for counting and loading small pieces of lead into the containers in which said leads are sold.

While I have shown my invention as used for the particular purpose of loading leads, intended for use in magazine pencils, yet it will be obvious that my invention is not limited to this particular use, but may be used for the loading of other small objects, such as tooth picks, nails, etc., into suitable containers.

My invention may be best understood by reference to the accompanying drawings, of which:

Fig. 1 is a side elevation of my improved machine taken on the line 1—1 of Figure 2;

Fig. 2 is a top view;

Fig. 3 is a view partly in section taken along the line 3—3 of Fig. 2;

Fig. 4 is a detail of the cylinder used to count the leads and withdraw the same from the magazine;

Fig. 5 is a front elevation partly in vertical section;

Fig. 6 is a top view of the mechanism as looking down from the line 6—6 of Fig. 3;

Fig. 7 is a detail of the register actuating mechanism, taken along the line 7—7 of Fig. 5, and

Fig. 8 is a view along the line 8—8 of Fig. 3.

Similar reference numerals refer to like parts in all the figures.

As before stated, the particular use in which I show my herein described invention is that of loading leads, used in magazine pencils, into the boxes in which said leads are sold. These leads are in the form of a cylinder and are about an inch and a half in length and about fifty one-thousandths of an inch in diameter.

Prior to the use of my machine, it has been the custom to count these leads by hand and load a given number of them, usually one dozen, in a suitable box. By the use of my improved machine, one is enabled to dispense with this counting operation. I sim-

ply load the leads into a hopper at the top of the machine and load empty boxes into a holder at the bottom of the machine. The machine then counts the leads, and places twelve leads in each box. The box is thereupon moved out of the position in which it was filled and a new box is brought into position to receive a dozen of leads.

The description of my machine may be best divided into two portions: First, that of the counting and delivering mechanism; second, that of the mechanism for bringing the boxes into a position to be filled.

My improved machine is mounted on a base plate 20, which is supported on four legs 21. Mounted on the base plate 20, is a suitable source of power 22, in this case an electric motor (although any source of power may be used) which serves to actuate a worm gear 23, rigid to a shaft 24 rotatably mounted in the framework of the machine. On the shaft 24 is a worm 25, which drives a worm gear 26, located on a main shaft 27 rotatably mounted in the framework of the machine and which carries various mechanisms hereinafter to be described.

Mounted on the top portion of the machine is a hopper 28, whose width is equal to the length of the cylinders of lead, and said hopper is placed on an incline, so that the leads will roll to the bottom thereof by gravity. The hopper 28 is provided with a vertical portion 29, the sides of which extend to the circumference of a counting cylinder 30. The vertical portion 35 of the hopper has inserted in it a plate 31, which is provided with a strip of metal 32, formed into a succession of inclines 33, as best shown in Fig. 3. The object of these inclines is to provide a sliding surface for the leads and thereby to cause them to lie straight in the hopper. Owing to the succession of inclines 33, by the time the cylinders of lead fall to the bottom of the vertical portion 35 of the hopper, they all will lie approximately parallel to the bottom of the hopper and at right angles to the direction of rotation of the counting cylinder 30.

The counting cylinder 30 is provided with three groups of twelve grooves 34. The distance between the consecutive grooves of the same group is approximately equal to the diameter of the leads. As the cylinder 30 rotates in the direction of the arrow (Fig. 3), the individual leads will fall into the

grooves 34, and when said grooves pass the vertical portion 35, there will be a cylinder of lead in each of said grooves, or, since there are twelve grooves, a dozen leads will lie in said grooves on the surface of the cylinder 30. The cylinder 30 is rigidly mounted on the main shaft 27, and is kept constantly turning by the power of the motor 22. After the leads have been loaded in the grooves 34, as just described, continued rotation of the cylinder 30 brings said leads in contact with the discharging fingers 36 and 37, which lie in grooves 38 and 39, cut in the cylinder 30 to a depth below the bottom of the grooves 34. The fingers 36 and 37 are supported on a tie rod 40, which extends between the vertical side plates 41 and 42 of the machine, and said fingers 36 and 37 are further constrained, by engaging with a second tie rod 43 extending between these same plates. It will thus be seen that the fingers 36 and 37 are held rigidly in their positions, being constrained from rotary motion by the tie rods 40 and 43, and from sidewise motion by engagement with the grooves 38 and 39.

As the cylinder 30, charged with lead between the grooves 34, turns, the leads first strike an incline 44 on the end of the finger 37, which raises the righthand end of the lead (Fig. 4) out of engagement with the groove 34. The lefthand end is also raised out of engagement with the groove by the incline 45 on the finger 36. However, the finger 36 is provided with a small groove 46, into which the lefthand end of the lead falls after the incline 45 has raised it from the grooves 34, and in which it momentarily rests while the righthand end falls. This action is for the purpose of turning the lead from the horizontal position in the groove 34 on the cylinder 30 into an approximately vertical position for discharge into the containing boxes.

Between the vertical side plates 41 and 42 is a bottom plate 47, which supports a funnel 48, the sides of which are cut away so as to allow the cylinder 30 to project therein. As the leads are disengaged from the grooves 34 in the cylinder 30, by means of the fingers 36 and 37, they are turned approximately vertical and fall through the small end of the funnel 48.

I shall now describe the means for bringing the boxes serving to contain the leads into a position to receive them. Extending below the base plate 20 and supported from it by pillars 49, is a plate 50, upon which is mounted a vertical shaft 51, rotatably mounted on which is a disc 52, in which are twelve holes 53, serving to locate the boxes 54. Rigid with the disc 52 is a second plate 55 having twelve sinks 56 therein, said sinks being vertically under the holes 53. The plate 55 has a ratchet wheel 57, of

twelve teeth, rigidly attached thereto, and oscillatably mounted on the shaft 51 is a plate 58, on which is mounted a pawl 59, by a stud 60, said pawl 59 being held in engagement with the wheel 57 by a spring 61. The disc 55 is provided with a series of locating notches 62 and adapted to engage with said notches is a roller 63, mounted on a stud 64, rigid in a lever 65 pivoted to the framework by a stud screw 66, and urged in a clockwise direction (Fig. 6) by a spring 67, extending between the lever 65 and a stud 68 on the plate 50.

I will now describe the means by which the disc 52, and the plate 55 rigid therewith are fed.

Mounted on the main shaft 27 is a three-lobed cam 69, said cam having one lobe corresponding to each group of grooves 34. Each of said lobes serves to engage a roller 70, mounted on the end of a lever 71 rotatably mounted on the tie rod 40 and having an extending arm 72 having a slot 73 therein.

Mounted on a horizontal shaft 74 is an actuating lever 75 having a pin 76 therein adapted to engage the slot 73 and a pin 77, on which is mounted a link 78 engaging a stud pin 79 on the plate 58. A spring 80, extending between a stud 81, mounted in the lower side of the plate 20, and the lever 75, serves to maintain said lever in the position shown in Fig. 3. Obviously, when the lobes of the cam 69 engage the roller 70, the ratchet wheel 57 will be fed one tooth, thus bringing a new box 54 vertically underneath the funnel 48. The positions of the cam 69 and the groove 34 are so arranged that the disc 52 and the plate 55 are not fed until after all of the leads have been withdrawn from the surface of the cylinder 30 by the fingers 36 and 37. It may happen that the leads in falling into the box 54 will not fall entirely to the bottom of said box, owing to the adhesion to the sides thereof, or owing to other leads already in the box, and for this contingency I have provided a tapper, adapted to give the box 54 a series of light blows to slightly shake the contained leads, for the purpose of allowing them freedom to pass to the bottom of the box. This tapping arrangement is best shown in Fig. 6, from which it will be seen that I have provided a lever 82 rotatably mounted on a stud 83, mounted on a plate 50 and urged in a contra-clockwise direction by a spring 84. The lever 82 has a tapping portion 85, which is adapted to contact with the boxes 54, and also has a tail 86, which is normally held in the position shown in Fig. 6, by a cam 87 rotatably mounted on a stud screw 88 in the plate 50. The cam 87 is provided with a series of ratchet teeth 89, and is rotated in the direction of the arrow (Fig. 6) by means presently to be described.

Obviously, during the travel of the concentric portion of the cam under the tail 86, the tapper 85 will be held out of contact with the boxes 54. However, during the passage of the ratchet 89 under the tail 86, the lever 82 will vibrate, due to the spring 84, thus giving six blows to the box 54 at that time under the funnel 48.

The cam 87 is rotated by means of a gear 90 rigid therewith, into which meshes a gear 91, rigid on a shaft 92 rotatably mounted in the side of the framework of the vertical plate 42. A bevel gear 93 is mounted on the upper portion of the shaft 92 and engages with a bevel gear 94 rigid to the main shaft 27.

In order to keep count of the number of leads which have been loaded into the boxes, I have provided the shaft 27 with a spur gear 95 rigidly attached thereto (Fig. 7), and said gear engages a spur gear 96 rotatably mounted on a stud screw 97 on the vertical side plate 41. The gear 96 engages a spur gear 98, mounted on a stud screw 99 on the plate 41, and the gear 98 engages the lowest wheel of a totalizer or counter 100, which is suitably geared to count pieces, dozens and gross. I have shown a standard Wahl totalizer as described by me in numerous patents, particularly No. 893,719, of July 20, 1908, as being used as a counter. Of course any other standard form of counter would answer equally well.

The operation of my improved machine is as follows:

The hopper 28 is loaded with leads, and the operator is provided with a supply of empty boxes 54. Ten of these boxes are loaded into the disc 52 and the machine is started. Twelve leads are loaded into the box vertically underneath the funnel, said box is tapped during the loading process by the lever 82, and then, by the actuation of the lever 75, the loaded box is moved from underneath the funnel and an empty box moved into place beneath the funnel. As soon as a loaded box gets out of the way of the funnel, the operator removes this loaded box and replaces it with an empty one, which in due time is brought vertically underneath the funnel 48 and filled with twelve leads. The process may continue indefinitely. Only ten boxes are loaded into the disc so as to leave space for the fingers of the operator. Obviously it would be much more inconvenient to withdraw a box from the disc and put a new one in the place of the one withdrawn if the disc had all of its holes filled than it would be if the disc carried but ten boxes, leaving two empty holes, thus providing a space between the boxes into which the operator may insert his or her fingers.

While I have shown my machine adapted to load a dozen leads into each of the

boxes, it is obvious that this is simply because of the number of grooves 34. Any desired number may be loaded by changing the number of said grooves. I will also call attention to the fact that while I have shown my machine in its preferred embodiment for the use of loading leads in containers, that this is by no means the only use to which my invention may be put. Other articles besides leads may be counted and loaded.

Many changes and variations may be made from the precise mechanism herein disclosed without departing from the spirit of my invention, since I claim:

1. In a lead delivering machine, the combination of a rotary cylinder having a group of grooves adapted to receive leads and also having a groove extending at right angles to said first mentioned grooves and a finger to withdraw the leads from said first mentioned grooves, normally resting in said second mentioned groove.

2. In a lead delivering machine, the combination of a rotary cylinder having thereon a group of grooves adapted to receive leads therein, and also a second groove located on the surface of said cylinder at right angles to the first groove and extending below the bottom of said first grooves, and a finger normally resting in said second groove to withdraw the leads from said first grooves.

3. In a lead delivering machine, the combination of a cylinder, having a plurality of groups of grooves adapted to distribute leads located on the periphery of said cylinder, a pair of grooves in said cylinder at right angles to the line of said first mentioned grooves, and a pair of fingers operatively associated with said second mentioned grooves, one of said fingers being longer than the other, whereby said leads are discharged from the cylinder in an approximately vertical direction.

4. In a lead delivering machine, the combination of a magazine adapted to receive a plurality of leads, means to align said leads in an approximately horizontal arrangement, a rotating cylinder adapted to intermittently withdraw a predetermined number of leads from said magazine, means to discharge said leads from said cylinder and turn them approximately vertical as an incident of said discharge, a funnel adapted to receive said leads after they are discharged, and means to bring containers successively into cooperation with said funnel to receive the leads discharged from said cylinder.

5. A machine for delivering material to receptacles comprising a magazine to receive the material, a rotatable drum for feeding the material from the magazine, a rotatable support for receiving the receptacles,

means for rotating the drum, a cam rotatable with the drum, a ratchet wheel connected to the support, and means engaging the ratchet wheel and operated by the cam for rotating the support.

6. A machine for delivering material to receptacles comprising a magazine for receiving the material, said magazine having a discharge opening therein, a drum rotatably mounted adjacent the discharge opening for delivering the material, a funnel adapted to receive the material from the drum, means within the funnel for removing the material from the drum, a rotatable support for the receptacles beneath the lower end of the funnel, means for rotating the drum, and means operable by the rotation of the drum for rotating the support.

7. A machine for delivering pencil leads to receptacles comprising a magazine for holding the leads in horizontal position, said magazine having a discharge opening therein, a drum rotatably mounted adjacent the discharge opening and having a plurality of longitudinally extending grooves to receive the leads from the magazine, a funnel for receiving the leads from the drum, arms within the funnel adapted to engage the leads to remove them from the drum and deliver them to the funnel in vertical position, a rotatable support for the receptacles, means for rotating the drum, and means for rotating the support to bring the receptacles successively beneath the funnel.

8. A machine for delivering pencil leads to receptacles comprising a magazine for receiving the leads in horizontal position, said magazine having a discharge opening therein, a rotatable support for the receptacles, means for intermittently rotating the support, means for delivering leads from the magazine to the receptacles in vertical position, a pivoted arm having one end extending adjacent the receptacle being filled, and means for swinging the arm to tap the side of the receptacle to arrange the leads therein.

9. A machine for delivering pencil leads to receptacles comprising a magazine for receiving the leads in horizontal position, a

plate received in the magazine and provided with a plurality of inclined projections adapted to retain the leads in horizontal position, a rotatable support for the receptacles, means for feeding a predetermined number of leads from the magazine to each receptacle, and means for operating the support.

10. A machine for delivering leads to receptacles comprising a support, a hopper carried by the support for containing the leads, a funnel carried by the support, a drum rotatably mounted beneath the hopper for delivering the leads to the funnel, a table rotatably mounted beneath the funnel for carrying the receptacles, a ratchet connected to the table, an oscillatory plate, a pawl carried by the plate and adapted to engage the ratchet, means for operating the drum, a cam carried by the drum, a pivoted lever adapted to be operated by the cam, a lever pivoted to the support and pivotally connected at one end to the first mentioned lever, and means connected to the opposite end of the second mentioned lever and to the oscillatory plate whereby the plate and table will be moved by the operation of the drum.

11. A machine for delivering pencil leads to receptacles comprising a magazine for receiving the leads in horizontal position, a removable plate received vertically in the magazine, and provided with a plurality of laterally extending inclined projections adapted to retain the leads in horizontal position, a rotatable support for the receptacles, means for feeding a predetermined number of leads from the magazine to each receptacle, and means for rotating the support.

12. In a machine of the character described, a magazine for receiving the leads, and a removable plate received vertically in the magazine and provided with a plurality of laterally extending inclined projections adapted to retain the leads in horizontal position.

In witness whereof I have hereunto subscribed my name.

JOHN C. WAHL.