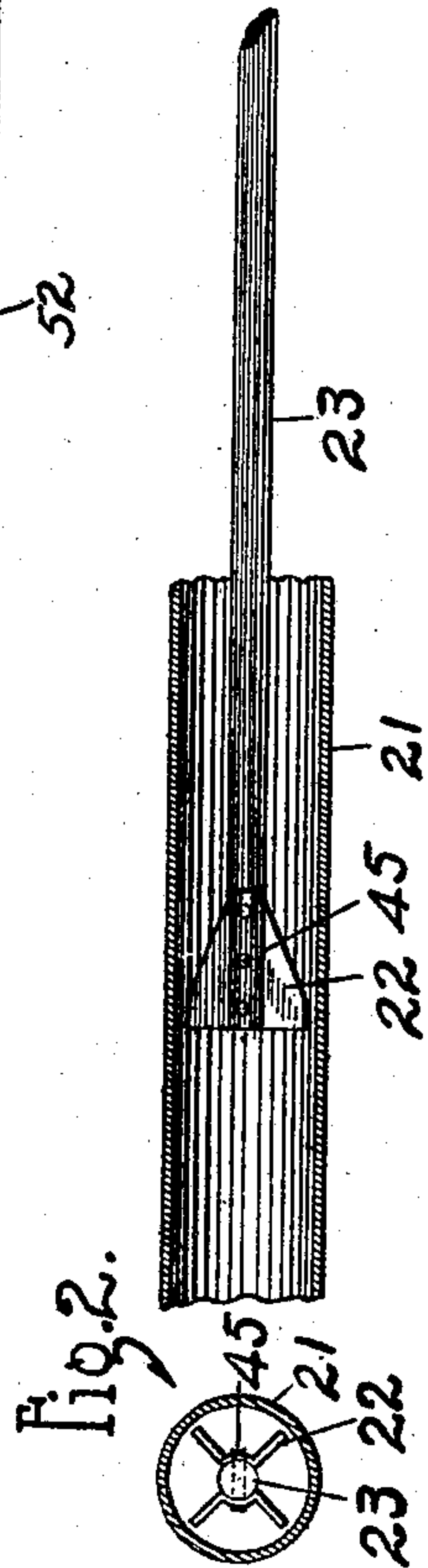
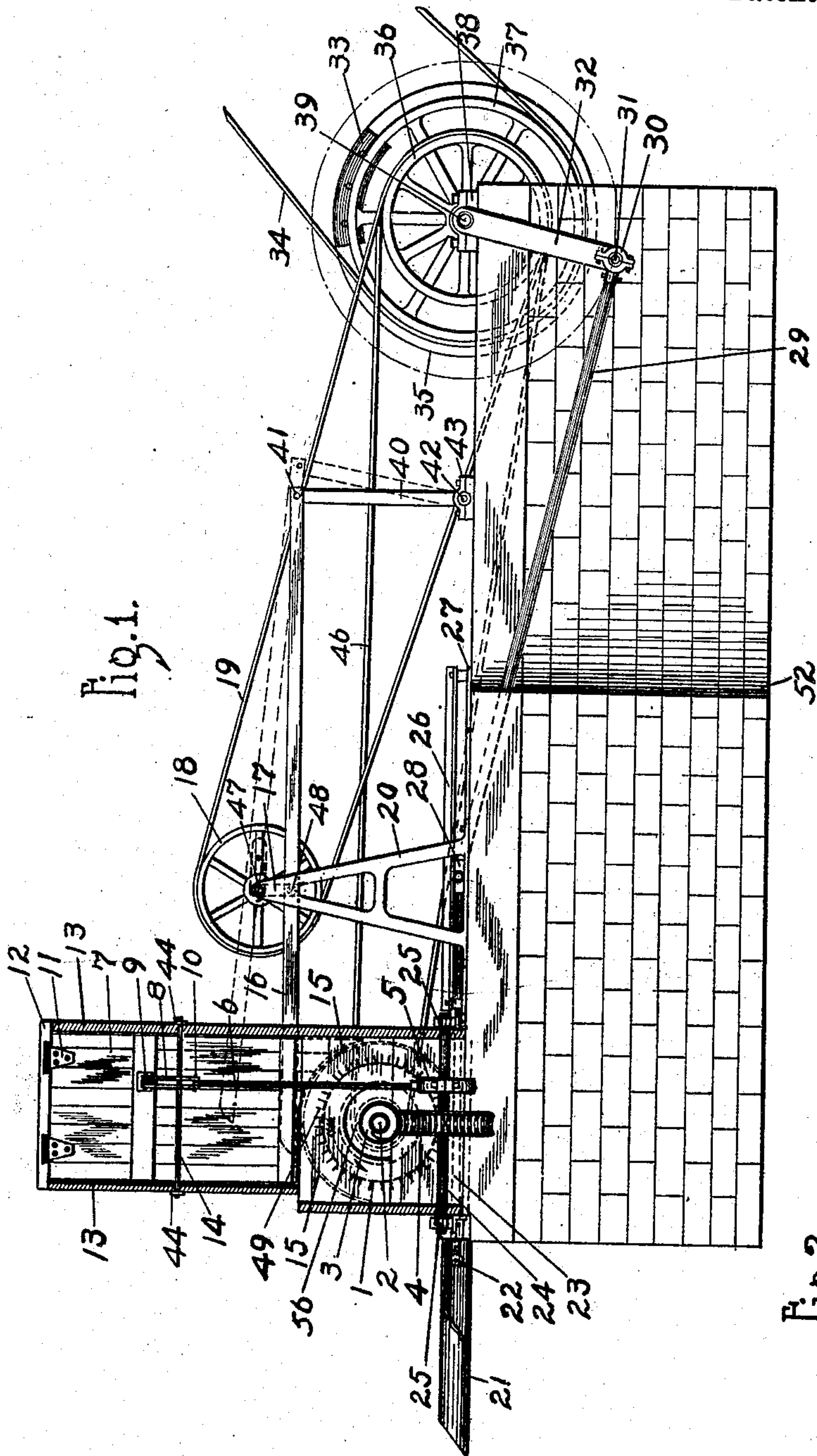


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APPLICATION FILED JULY 18, 1907.

915,885.

Patented Mar. 23, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

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H. M. Harper

INVENTOR

Leonard J. Powers.

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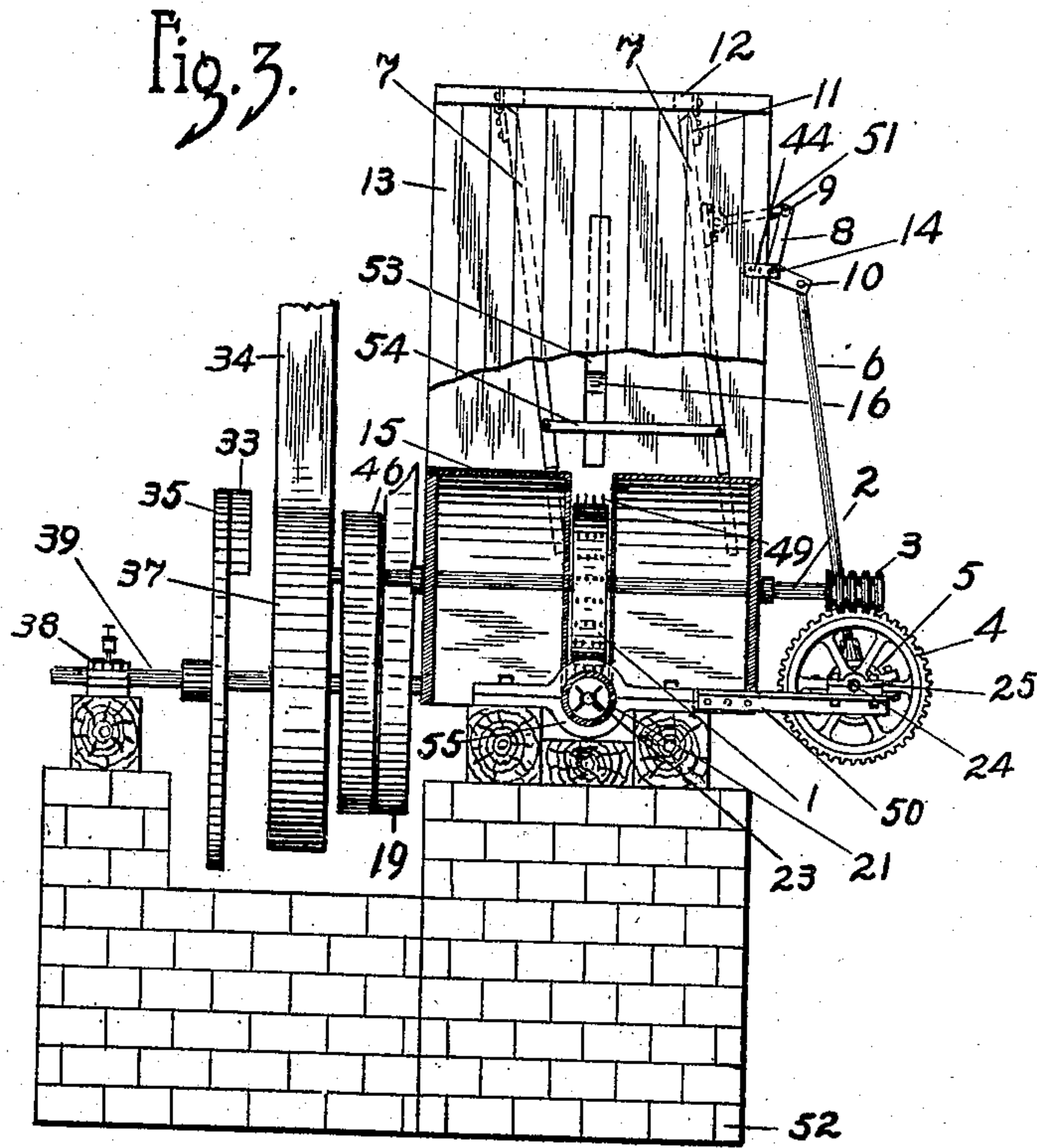
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UNITED STATES PATENT OFFICE.

LEONARD J. POWERS, OF WATERLOO, IOWA, ASSIGNOR TO THE POWERS MANUFACTURING COMPANY, OF WATERLOO, IOWA.

MACHINE FOR STUFFING HORSE-COLLARS.

No. 915,885.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed July 18, 1907. Serial No. 384,472.

To all whom it may concern:

Be it known that I, LEONARD J. POWERS, a citizen of the United States of America, and a resident of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Machines for Stuffing Horse-Collars, of which the following is a specification.

My invention relates to improvements in machines for stuffing horse-collars, and the object of my invention is to provide means whereby the material may be thoroughly disintegrated to form a homogeneous separated mass, prior to its introduction into the casing to be filled therewith. This object I have accomplished by the mechanism which is hereinafter fully described and claimed, and which is illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of my improved machine, parts being removed to disclose the interior arrangement. Fig. 2 is an enlarged detail sectional view of a portion of the delivery-tube with its inclosed packing-rod. Fig. 3 is an end elevation of my said machine.

My improvements shown in these figures, are improvements upon the machine for stuffing horse collars which was patented to me by the United States under Number 852,137, issued April 30th, 1907.

The hopper 13, the mechanism and supports of my machine are mounted on a base 52. The hopper is formed with fixed front and rear walls 13, and cross-bars 12 on each side at the top to which are hinged the swing-sides 7. At a point in said hopper immediately below the lower ends of said swing-sides is located a partition or divided diaphragm in the form of semi-cylinders 15 upwardly curved and parallel to the front and rear walls, such dividing space between said partitions being just sufficient to contain the toothed-beater-drum 1, and said space being inclosed on the sides to prevent the escape laterally of the material deposited on said drum. The lower part of said space is in communication with a slotted opening of the same width, in the middle upper portion of the delivery-tube 21. The top of the hopper is open to receive a supply of the material to be used therein, such as unworked cotton fibers, and the swing-sides 7 are used to assist the descent thereof, and move it toward the space between the diaphragms 15.

The beater-drum 1 is mounted in bearings

in the lower part of the hopper and adapted to rotate in the direction of the arrow shown in Fig. 1. The cylindrical periphery of said drum is supplied with an evenly distributed number of short radial pins 49. Below said drum, a sufficient distance to be entirely clear of the pins 49, is a reciprocatory packing-rod 23 having at its forward end curved plates attached to it by rivets 45, and a plurality of radial blades 22 on said curved plates. Said rod 23 is adapted to reciprocate through the delivery-tube 21 with a long stroke extending from the rear wall of the hopper to the front end of said tube, the radial wings 22 not quite touching the interior of the tube. The rear end of the rod 23 has a cross-head 28 slidable in a guide 27, and said cross-head is pivotally connected to a connecting-rod 29, whose rear end is pivoted at 31 in bearings 30 on the end of the long crank 32, the latter secured to the drive-shaft 39. The shaft 39 is driven by a band-wheel 37 and power-belt 34, and on said shaft is secured the fly-wheel 35, also a belt-wheel 36, the latter driving a belt 19 and pulley 18. The belt-wheel 36 is of sufficient width to permit of another belt 46 also running over it the latter driving a pulley 56 secured to one end of the shaft 2 on which the drum 1 is mounted. The pulley 18 is secured to a shaft 47 whose ends are rotatably mounted in bearings in the upper ends of uprights 20. The shaft 47 has a crank-bend to which the lever-arm 16 is pivoted, and the forward end of said arm is adapted to enter and play back and forth as indicated by the dotted lines in Fig. 1, in the slot 53 in the rear wall of the upper part of the hopper 13. The object of said arm is to thrust down the contents of the hopper upon the beater-drum, and prevent any lodgment. The rear end of the arm 16 is pivotally connected to a rock-arm 40 on a pintle 41, the lower end of 40 being pivotally mounted in a bearing 43 on pintles 42. On the end of the shaft 2 opposite the pulley 56 is a worm 3 which intermeshes with and drives the gear-wheel 4 which is secured to the short shaft 24, the latter having its ends mounted in bearings 25 attached to and supported by the brackets 50. Secured to the shaft 24 is an eccentric which drives a sheave 5 on the lower end of the rod 6. The ends of a horizontal shaft 14 are mounted in brackets 44 secured to the hopper, and said shaft forms a fulcrum for

the bell-crank lever 8, one arm of which is pivoted at 10 to the upper end of the rod 6, while the other arm is pivoted at 9 to a link 51 whose other end is pivotally connected to one of the swinging sides 7. Inside of the hopper the swinging sides 7 are connected by a pivoted link 54, to cause both said sides to move synchronously.

As the method of arranging the belt-wheels 36 and 56 effects a very rapid rotation of the shaft 2 with its drum 1, the above described gearing 3—4 and the use of the eccentric 5 reduce the speed of the shaft 24 sufficiently as to cause the movement of the swinging sides 7 to be synchronous with the movement of the lever-arm 16 in and out of the hopper 13. As the speed of rotation of the beater-drum 1 is comparatively great, the effect of the contact of the stuffing material with the teeth 49 is to immediately tear the wisps of the cotton to pieces and form a body of light density and of homogeneous texture free from lumps. When the drum has drawn the material down into the delivery-tube 21, the long-stroke rod 23 with its radial blades 22 pushes a quantity of the fluffy mass out into the collar to be filled, the latter thus becoming stuffed with a homogeneous body of equal density throughout. The rapidity of rotation of the drum, taken together with the long-stroke action of the stuffing-rod, results in an increase of speed in the work of the machine, and conduces to a better distribution of the packing.

A further very important function of the high-speed drum is this, that long fibers of cotton or other similar material will be thrown cleanly off from such a drum into the receptacle or open tube beneath it, and such fibers cannot wrap around and felt up the drum as they will if a slow-speed drum is used. The greater centrifugal force of the high-speed drum throws off the long fibers, and the drum cannot felt up until it becomes useless to tear up and deliver the material to the receptacles. The long-stroke slow-moving packing-rod is adapted to cooperate with the high-speed drum by giving sufficient time on its rearward stroke for the tube to

fill up with the deposited material. It will be seen that the rapidly rotating drum thus subserves the double purpose of a feed-drum, and of a beater, the latter function being especially important in its resulting thorough disintegration of the lumpy material into a light homogeneous mass suitable for packing a horse-collar.

Having described my invention, what I claim as new, and desire to secure by Letters Patent; is:—

1. In a machine for stuffing collars, the combination of a hopper and a delivery-tube opening into it, a rod reciprocatory in said tube, a plurality of pairs of connected projecting wings removably secured on the packing end of said rod, and means for reciprocating said rod through said tube.

2. In a machine for stuffing collars, the combination of a hopper and a delivery-tube opening into said hopper, a rotatable beater-drum in said hopper, said drum being provided with peripheral teeth and adapted to deliver into said delivery-tube, a reciprocatory rod in said tube, and means for so rotating said drum and reciprocating said rod, as to cause the velocity of said drum to exceed the velocity of said rod.

3. In a machine for stuffing collars, the combination of a drum-containing chamber, a receptacle below and communicating with said drum-containing chamber, a packing-rod reciprocatory in and through said receptacle, means for imparting to said rod a comparatively slow and long stroke relative to the rate of peripheral speed of the drum in said chamber, a rotary drum mounted in said chamber and provided with distributing-teeth, means for rotating said drum at a sufficiently high rate of speed as to adapt it to tear apart and cleanly deliver without felting long-fibered materials to said packing-rod.

Signed at Waterloo, Iowa, this 3rd day of July, 1907.

LEONARD J. POWERS.

Witnesses:

BERTHA COLLENTINE,
O. D. YOUNG.