

No. 705,154.

Patented July 22, 1902.

H. SOMMERFELD.  
GRAIN CLEANER.

(Application filed Apr. 5, 1901.)

(No Model.)

3 Sheets—Sheet 1.

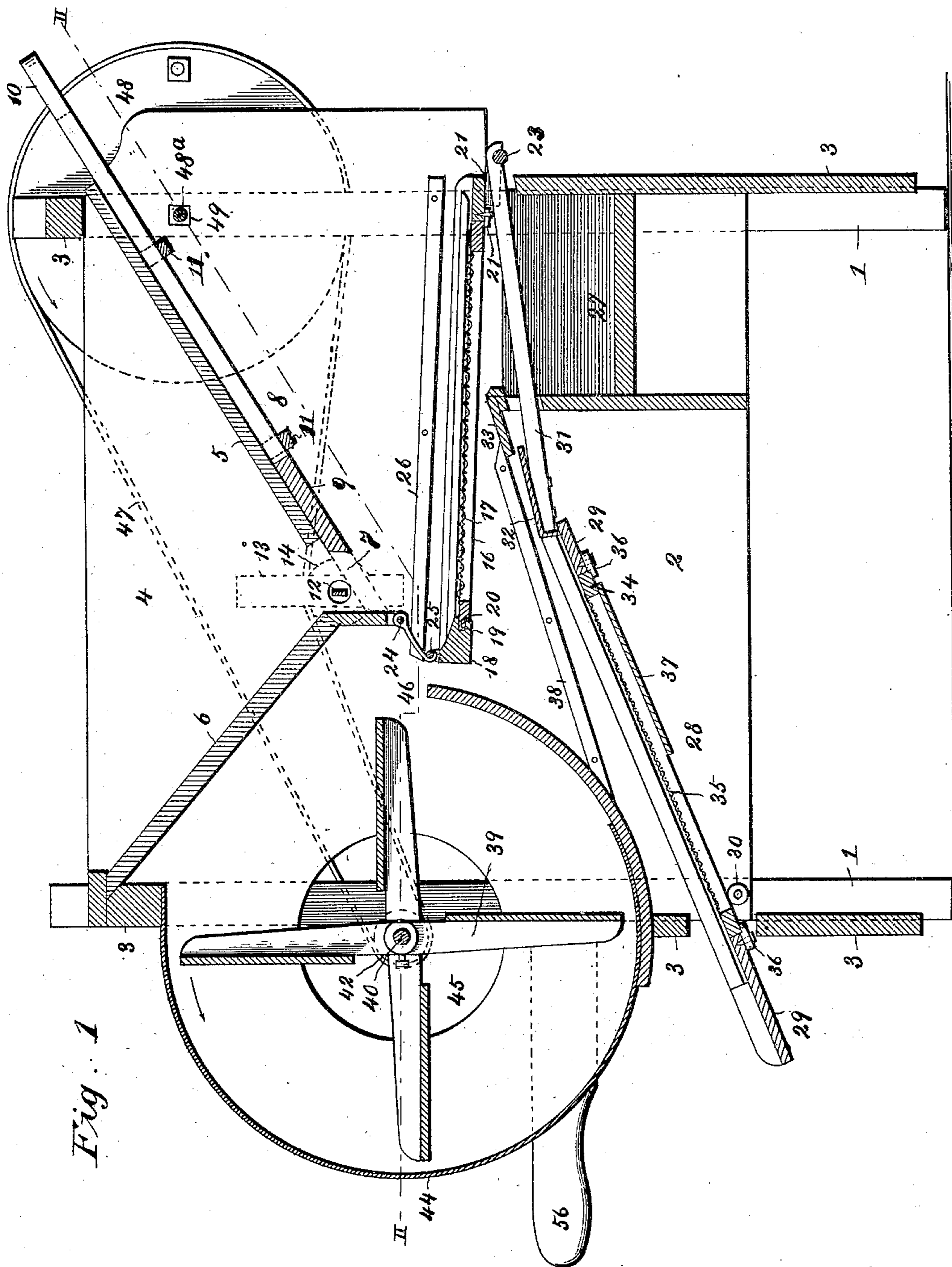


Fig. 1

Witnesses:

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*Arthur M. Arthur*

Inventor:

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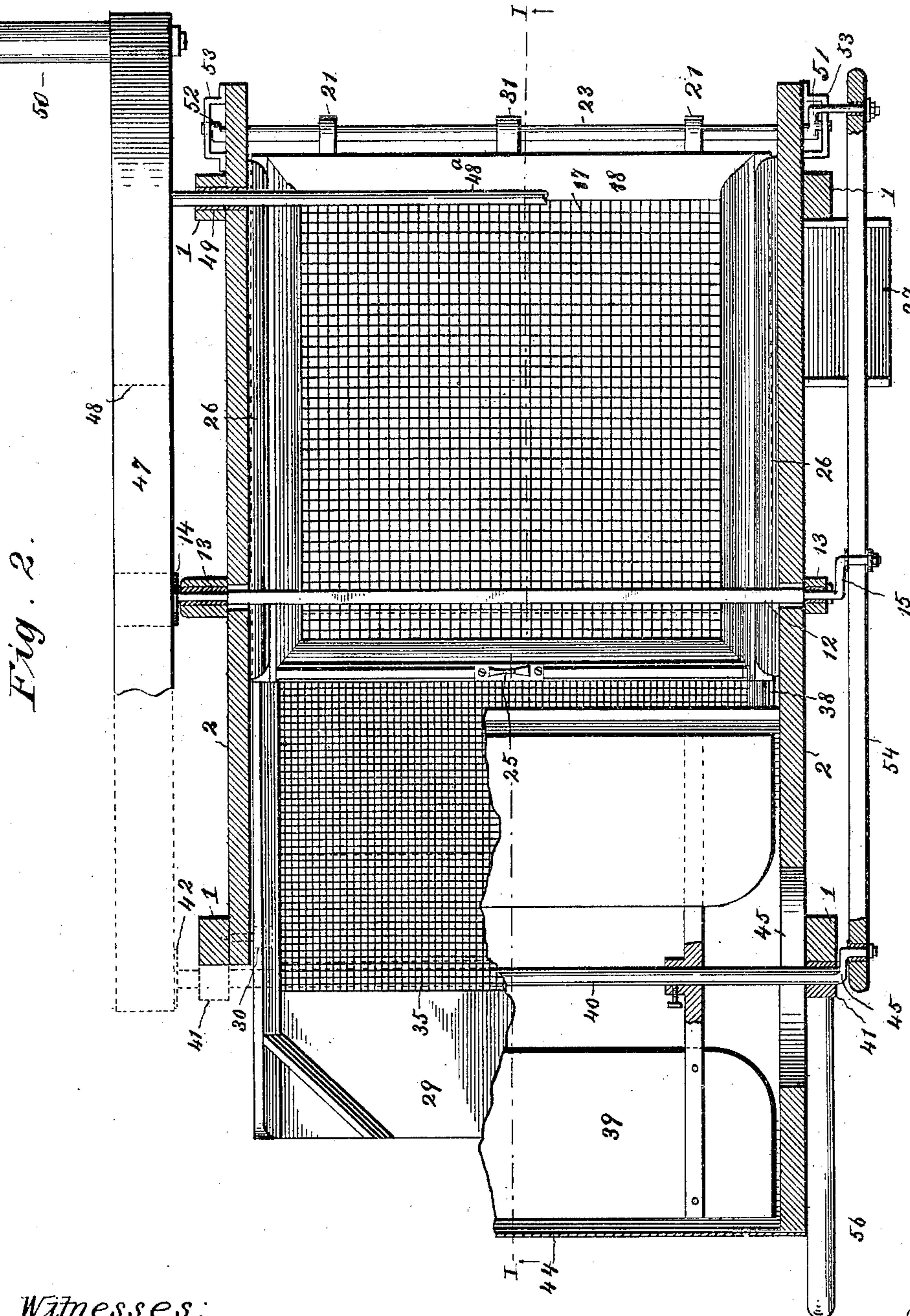
*By Fischer & Thorpe*  
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3 Sheets—Sheet 2.



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3 Sheets—Sheet 3.

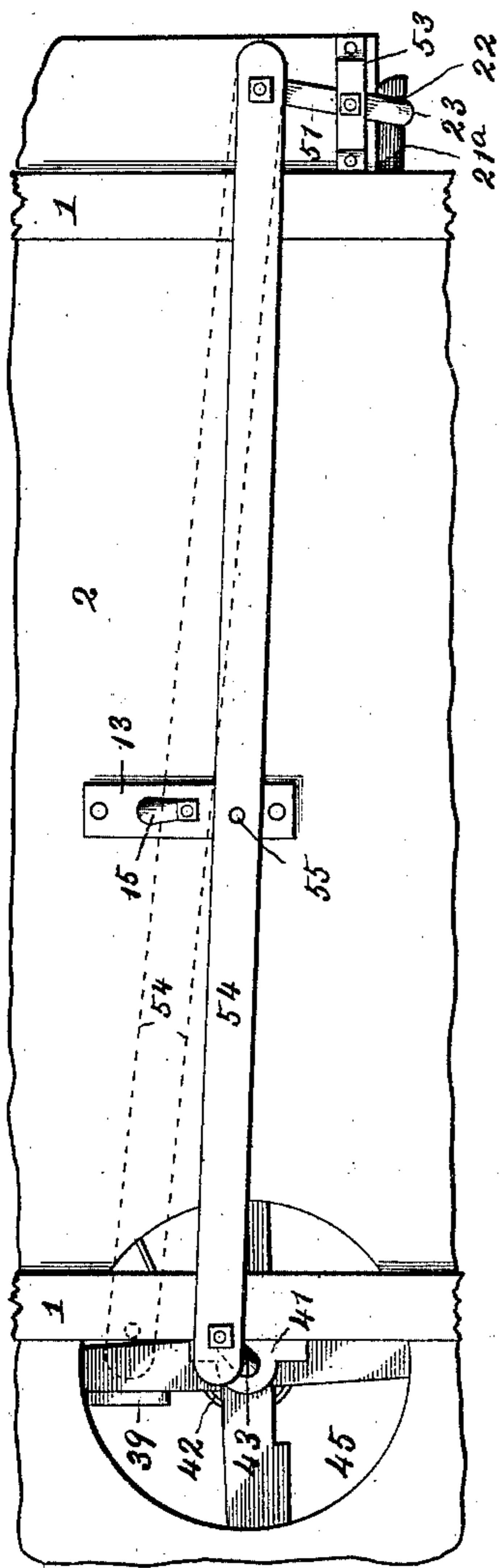


Fig. 3.

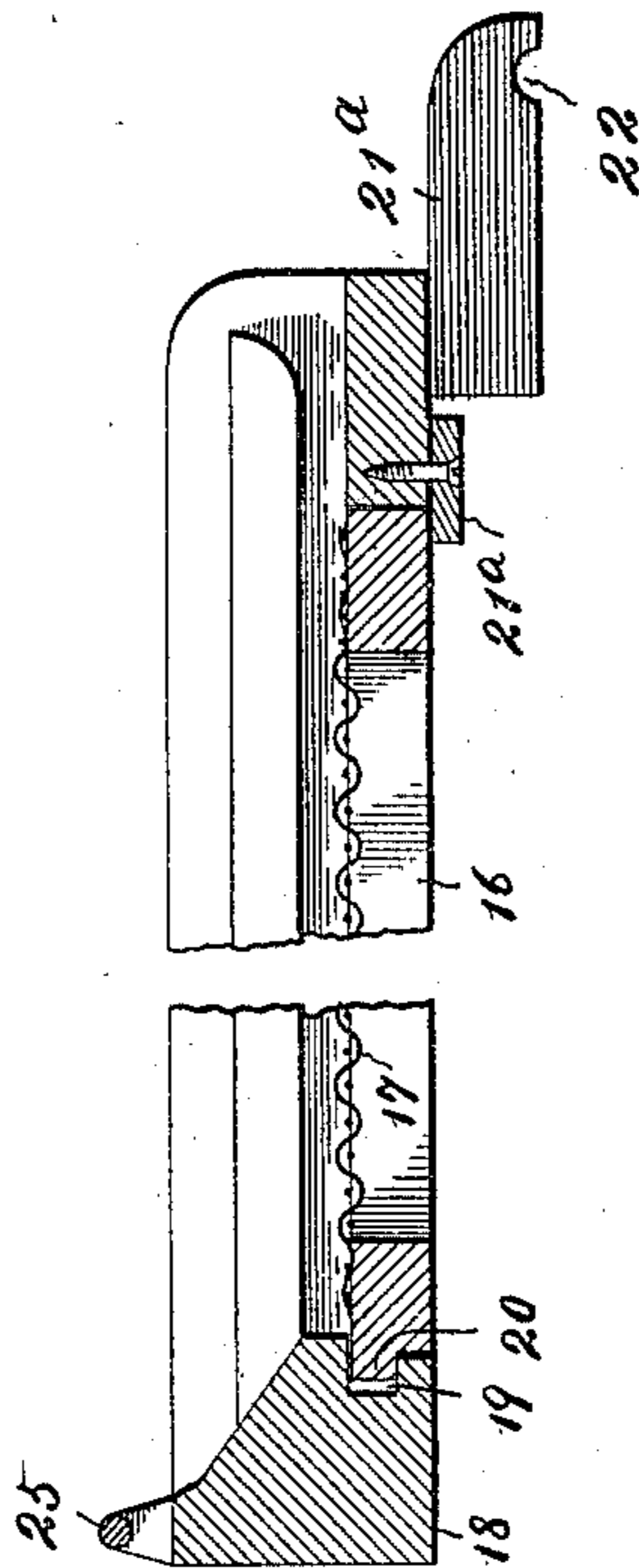


Fig. 5.

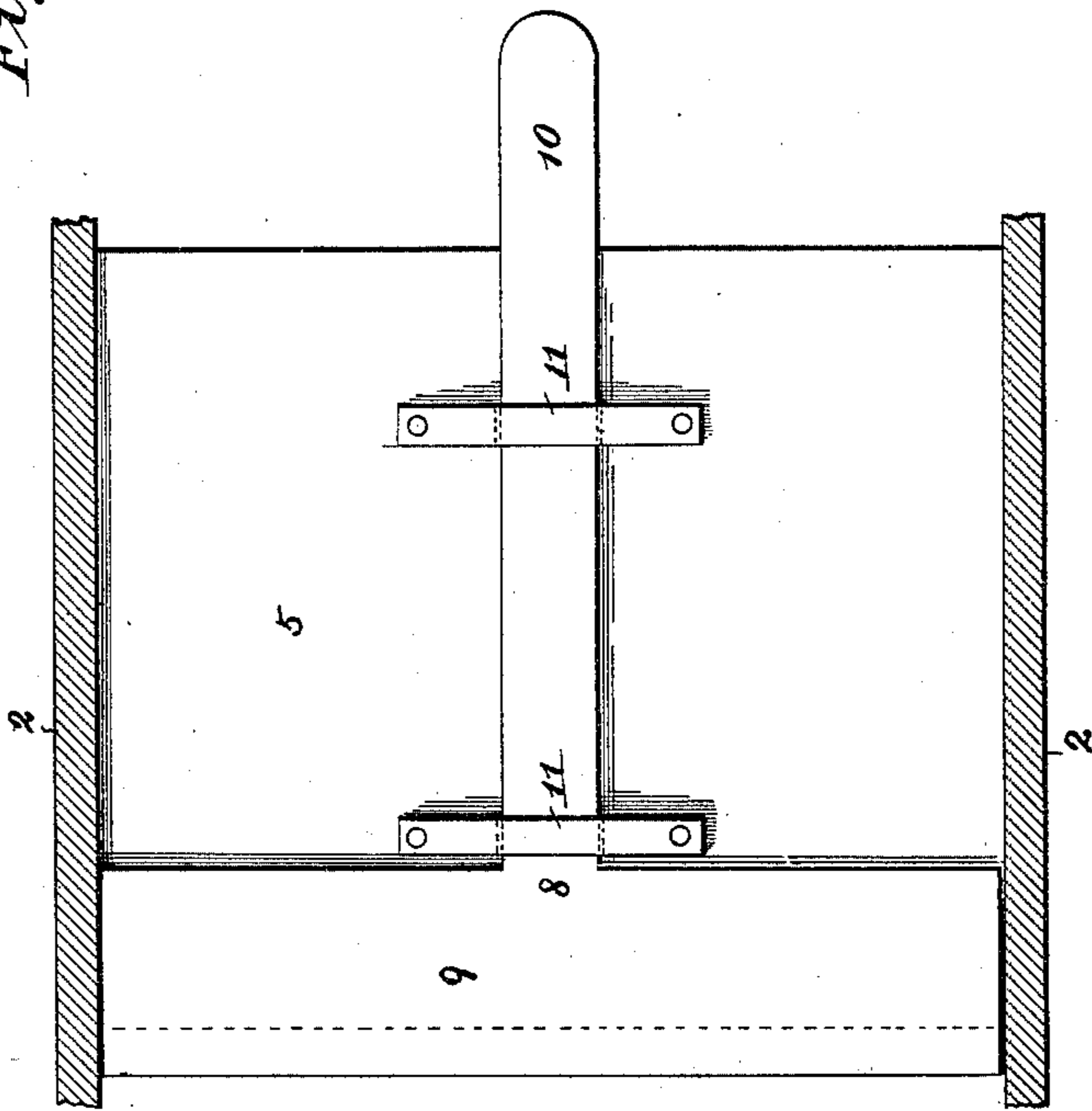


Fig. 4.

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# UNITED STATES PATENT OFFICE.

HEINRICH SOMMERFELD, OF CANTON, KANSAS.

## GRAIN-CLEANER.

SPECIFICATION forming part of Letters Patent No. 705,154, dated July 22, 1902.

Application filed April 5, 1901. Serial No. 54,546. (No model.)

*To all whom it may concern:*

Be it known that I, HEINRICH SOMMERFELD, a citizen of the United States, residing at Canton, McPherson county, Kansas, have  
5 invented a new and useful Grain-Cleaner, of which the following is a specification.

My invention relates to improvements in machines for cleaning grain, such as wheat, oats, corn, millet, &c.; and it may be said to  
10 consist in the novel arrangement and combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, which illustrate the invention, Figure 1 represents a  
15 vertical longitudinal sectional view of my improved machine, taken on line I I of Fig. 2. Fig. 2 is an irregular sectional plan view of same, taken on line II II of Fig. 1. Fig. 3 is a broken detail side elevation showing the  
20 connecting-bar secured at its opposite ends to the blower-shaft and the rocker-shaft. Fig. 4 is a broken inverted plan view of the hopper, showing the position of the feed cut-off thereon; and Fig. 5 is a broken vertical  
25 longitudinal sectional view of the upper screen forming part of my invention.

In constructing my machine I provide a rectangular frame consisting of four supporting corner-posts 1, side walls 2, and trans-  
30 verse end pieces 3. The upper portion of the frame is provided with a hopper 4, having bottom pieces 5 6, converging toward their lower ends, between which a transverse feed-opening 7 is left, through which the grain  
35 deposited in the hopper is fed to the screens below. Said feed-opening is controlled by a sliding cut-off 8, consisting of a transverse strip 9, extending the length of the feed-opening, and a handle 10, working through  
40 guides 11, secured to the under side of piece 5. By grasping the upper portion of the handle where it projects above the rear end of the hopper the cut-off may be moved up or down to increase or diminish the width of  
45 the feed-opening, the frictional contact between it and the bottom of the hopper serving to hold it in the position occupied when the handle is released.

To prevent the feed-opening from choking  
50 up with straw or other debris when the machine is in operation, and also to obviate the packing and clogging of the grain at the

feed-opening, I locate near the central portion of the latter a rotary agitator consisting of a flat transverse bar 12, extending through  
55 openings in the sides of the hopper, rounded near its terminals and journaled in bearing-blocks 13, secured to the outer sides of the machine. Said bar is provided with a small pulley 14, rigidly mounted on one end, and  
60 its opposite terminal is bent to form a crank 15 for a purpose hereinafter described.

As the grain passes through the feed-opening it falls upon a coarse sieve consisting of a rectangular inner frame 16, over which is  
65 stretched a wire screen 17, and an outer frame 18, having a transverse groove 19 at its forward end to receive a transverse tongue 20 on the adjacent end of the inner frame, which, together with a turn-button 21, re-  
70 movably secures the inner frame in position. By providing a detachable inner frame, as above described, screens of varying mesh for different grain may be substituted more economically than if the entire outer frame with  
75 its attachments had to be changed for each variety of grain.

When in its operative position, the outer frame is suspended by two arms 21<sup>a</sup>, projecting from its lower rear end, and provided with  
80 semicircular notches 22, which fit over a transverse rocker-shaft 23, and a hook 24, pivoted at its upper end to the bottom of the hopper and engaging at its lower bent end a loop 25, secured to the forward part of the frame.  
85 Thus by disengaging the hook from the loop and the arms from the shaft the frame may be removed from the machine whenever it is necessary to exchange the inner frames.

26 indicates deflecting-strips secured to the  
90 side walls of the machine just above the screen to direct all of the falling grain from the feed-opening onto the screen and prevent any waste which might otherwise occur between the side walls and sides of the screen-  
95 frame.

As the screen is moved rapidly back and forth by the rocker-shaft the lighter particles of grain, if it be wheat, will be spread out and carried toward the rear portion of  
100 the screen, where it falls through onto an inclined chute 27, which discharges it to one side of the machine, while the straw and chaff are discharged from the screen at the rear end

of the machine. The heavier and better quality of grain falls through the forward portion of the upper screen upon the rear portion of a lower screen 28, over which the best quality or No. 1 wheat passes and is discharged at the forward end of the machine, while the second-grade wheat falls through the screen in a heap beneath the machine.

Screen 28 is similar in construction to the upper screen, being provided with an outer rectangular frame 29, supported at its lower front end by frictionless rollers 30 and at its rear end by a centrally-located arm 31, having a semicircular recess at its rear end to engage the rocker-shaft. Said frame also has an apron 32 at its rear end, which extends beneath an inclined apron 33, projecting from the inner side of chute 27 for the purpose of directing all grain falling thereon onto the lower screen. The inner rectangular frame 34 is covered by wire-cloth 35 of finer mesh than that on the upper screen and is removably held in the outer frame by turn-buttons 36. It also has an apron 37 to catch the grain falling through the screen and discharges it in a pile beneath the machine.

38 represents deflecting-strips secured to the side walls of the machine above the lower screen to prevent any of the grain falling from the upper screen from passing between the side walls and the sides of the lower screen.

As the grain and chaff fall from the feed-opening the chaff is blown out through the rear end of the machine by an air-blast generated by a rotary blower 39, rigidly mounted upon a transverse shaft 40, journaled in bearings 41, secured to the two forward supporting-posts 1, and is provided at one end with a small rigidly-mounted pulley 42 and has its opposite terminal bent to form a crank 43.

Blower 39 is housed in by the side walls 2 and a segmental covering 44 and when in operation draws in air through circular openings 45 in the side walls and discharges it at a high velocity through opening 46 over the screens.

Motion is transmitted to pulley 42 by a belt 47, connecting the same to a large drive-pulley 48, rigidly mounted upon a transverse shaft 48<sup>a</sup>, journaled in bearings 49, located in the upper portions of the two rear supporting-posts 1. Pulley 48 of course may be operated by any suitable means; but in small machines I prefer to employ a crank-handle 50 for that purpose. The agitator 11 is also rotated by a belt 47, which contacts with the upper surface of pulley 14.

Rocker-shaft 23 is bent upwardly and outwardly at its opposite ends 51 52 and is thereby pivotally suspended from brackets 53, secured to the side walls of the machine. Terminal 51 extends above its pivotal point to receive one end of a pivotally-secured connecting-bar 54, pivotally fastened at its forward end to the crank-shaft of the blower, and transmits motion therefrom to said rocker-shaft.

In cleaning very small grain—like millet, for instance—which is liable to be blown away by the air-blast, I disconnect the belt and connecting-bar from the blower and substitute a short belt, (not shown,) which extends only from the drive-pulley to pulley 14, and secure the connecting-bar to crank 14 at opening 55.

For convenience in moving the machine around I provide its forward portion with two handles 56, which project forwardly from the side walls 2.

From the above description it will be apparent that I have produced a simple and durable machine and one that is thoroughly effective for the purpose intended.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a grain-cleaner, a hopper, a cut-off for increasing or diminishing the feed-opening therein, a screen swung beneath said feed-opening, arms projecting from one end of the screen, a rocker-shaft which is engaged by the arms, a loop secured to the screen at the opposite end from the arms, and a hook adapted to engage the loop, substantially as described.

2. In a grain-cleaner, a blower, a crank-shaft upon which it is rigidly mounted, an agitator, consisting of a journaled transverse bar terminating at one end in a crank, a rocker-shaft suitably mounted, and a connecting-bar secured at one end to the rocker-shaft and adapted to be secured either to the blower-shaft or the crank of the agitator, substantially as described.

3. In a grain-cleaner, a hopper, an agitator journaled in the opposite ends of the feed-opening therein, a screen consisting of a swinging outer frame, a transverse groove in the front portion thereof, an inner frame removably fitting in the outer one, a transverse tongue extending from the front end thereof and adapted to fit into the groove in the outer frame, suitable means for securing the rear end of the inner frame to the outer one, and an inclined chute located beneath the screen, for the purpose set forth and described.

4. In a machine of the character described, a frame, a hopper located therein, a feed-opening at the bottom of the hopper, a screen suspended beneath the feed-opening, a rocker-shaft, arms projecting from the screen and engaging the rocker-shaft, another screen suspended beneath the first-mentioned one, an arm projecting therefrom and engaging the rocker-shaft, an upper apron secured to the rear of the screen, a lower apron secured in advance of the upper apron, and rollers for supporting the lower front portion of the screen, substantially as described.

5. In a grain-cleaner, a hopper, an adjustable cut-off located in the feed-opening thereof, a screen suspended beneath said feed-opening, a pair of arms projecting from the rear end of the screen and provided with notches at their outer terminals, a rocker-shaft engaged by the notched ends of the arms, and

adapted to impart a swinging motion to the screen, a loop secured to the central part of the forward portion of the screen, and a depending hook adapted to engage the loop and support the forward end of the screen, substantially as described.

6. In a grain-cleaner, a hopper, a screen suspended beneath the feed-opening therein, two notched arms projecting from the rear end of the screen, a rocker-shaft engaged by the notched terminals of the shaft, and adapted to impart a swinging motion to the screen, a centrally-located loop secured to the forward portion of the screen, a depending hook which engages the loop, and a blower located at the rear end of the screen, substantially as described.

7. In a grain-cleaner, a blower-shaft having a crank formed integral with one end thereof, a depending rocker-shaft journaled at the opposite end of the machine, an arm formed integral with one end of the rocker-shaft and extending above the journal thereof, a connecting-rod for transmitting motion from the

blower-shaft to the rocker-shaft, a sieve, a hook and loop for supporting the forward end thereof, and arms rigidly secured to the rear end of the sieve, and adapted to engage the rocker-shaft, substantially as described.

8. In a grain-cleaner, a hopper, an agitator journaled therein, consisting of a transverse bar, a pulley mounted on one end of said bar, a crank-arm formed integral with its opposite end, a connecting-bar adapted to be secured near its central portion to the crank-arm, a depending rocker-shaft, an arm formed integral with one end thereof and pivotally secured to one end of the connecting-bar, a sieve, a hook and loop for supporting its forward end, and arms rigidly secured to its rear end and adapted to engage the rocker-shaft, substantially as described.

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

HEINRICH SOMMERFELD.

Witnesses:

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