

No. 678,183.

Patented July 9, 1901.

A. H. JOCELYN, Dec'd.
A. H. JOCELYN, Executor.
AMALGAMATING APPARATUS.

(Application filed Oct. 30, 1897.)

(No Model.)

Fig. 1.

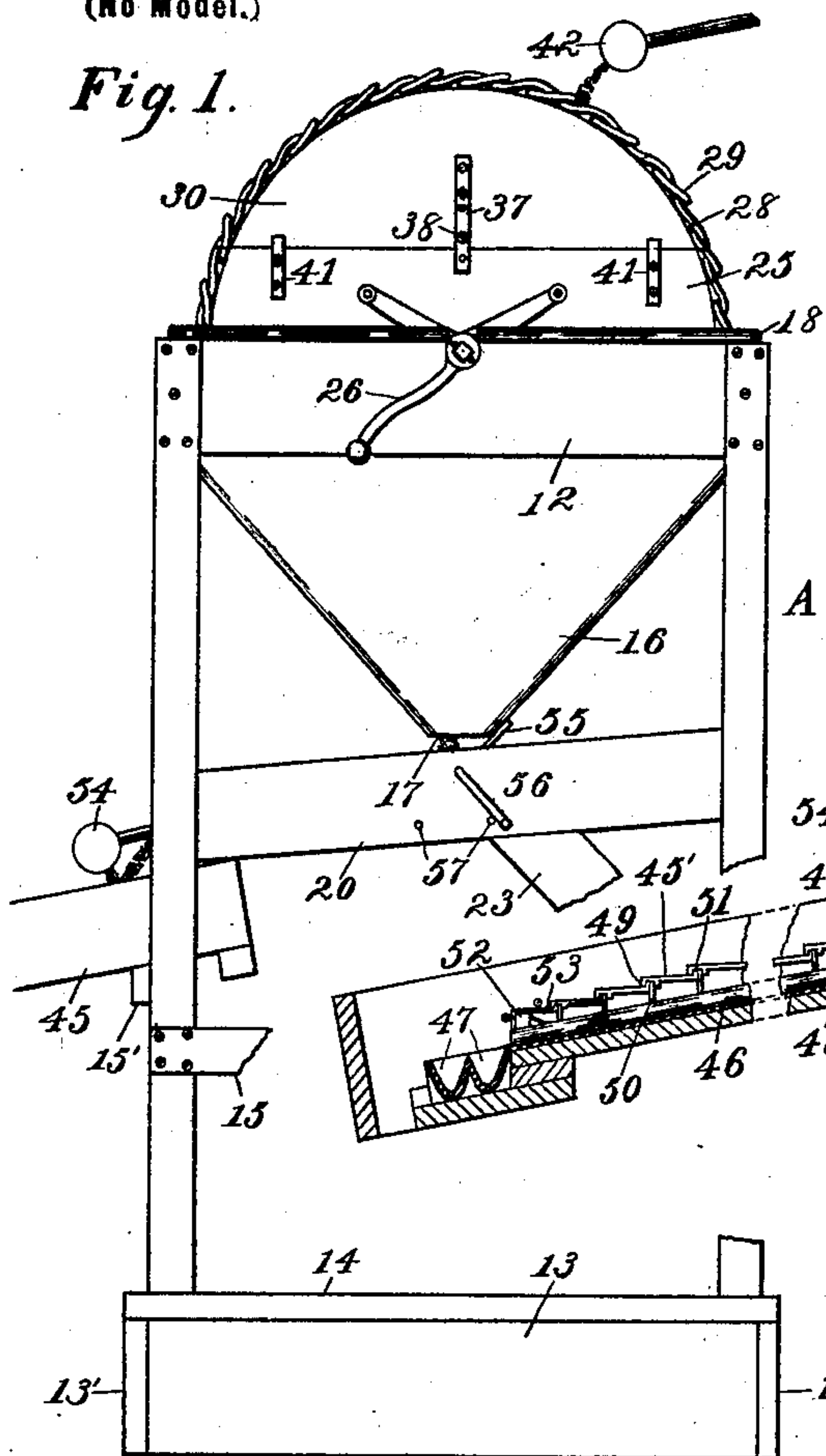


Fig. 3.

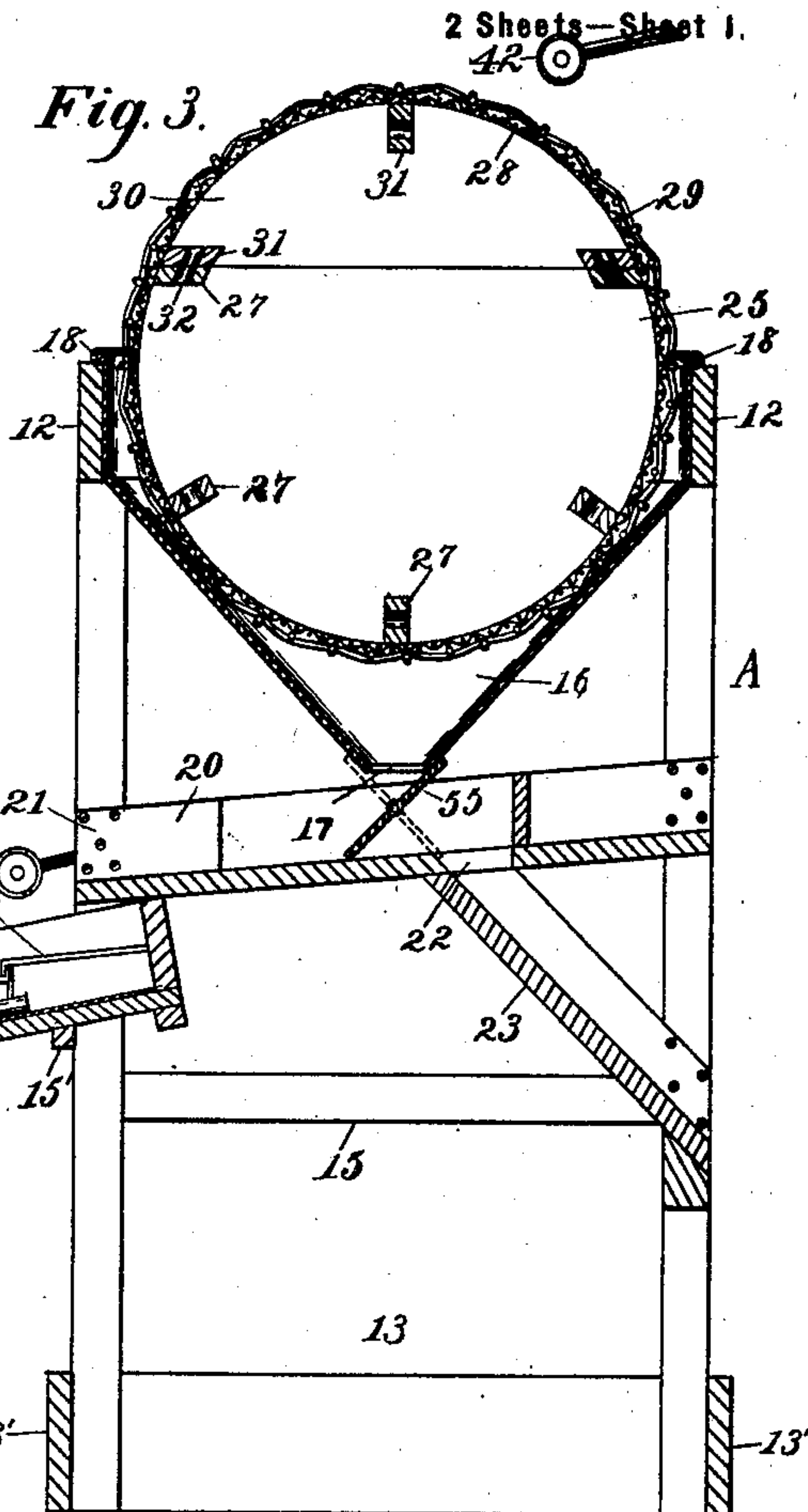


Fig. 2.

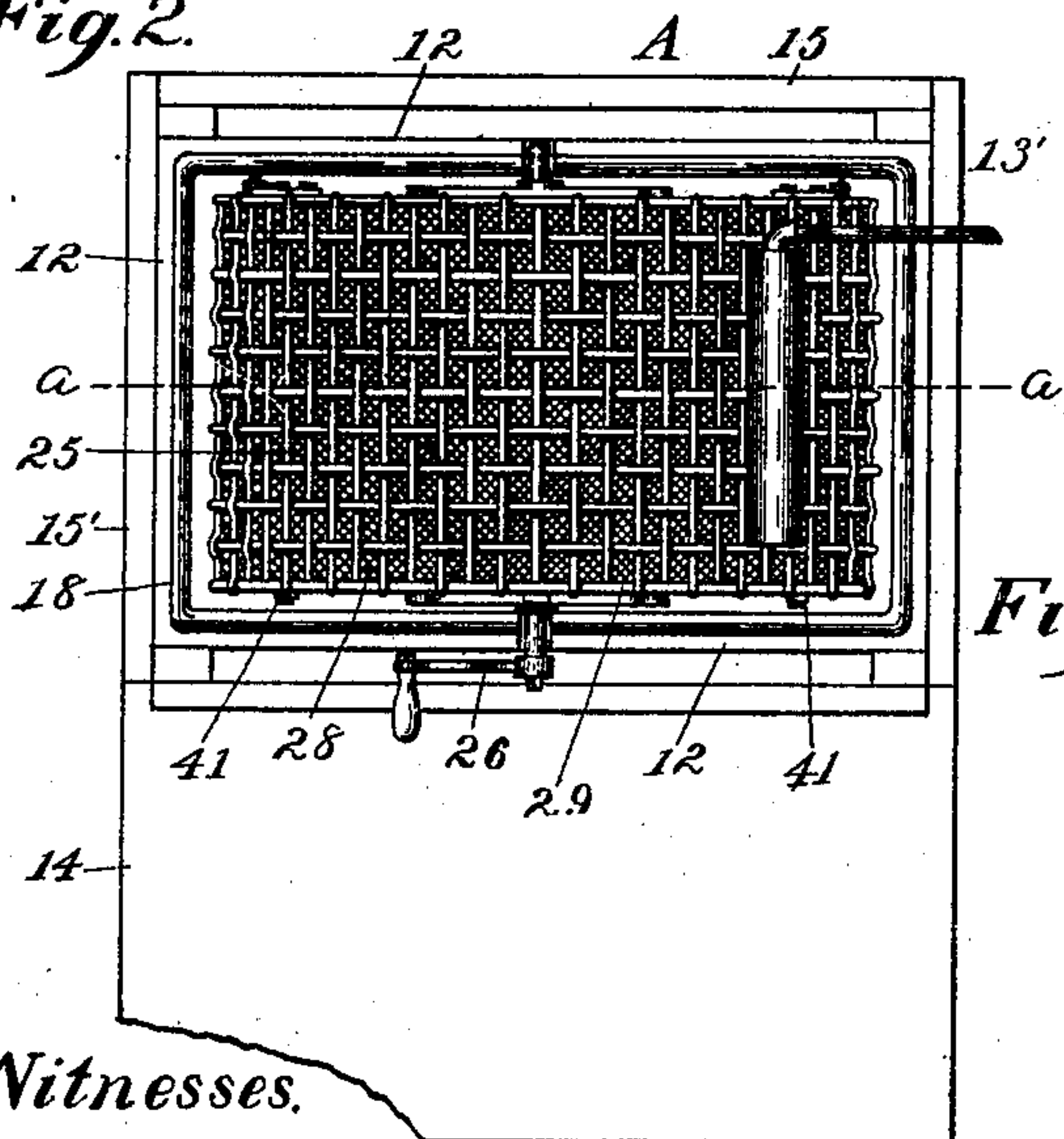


Fig. 4.

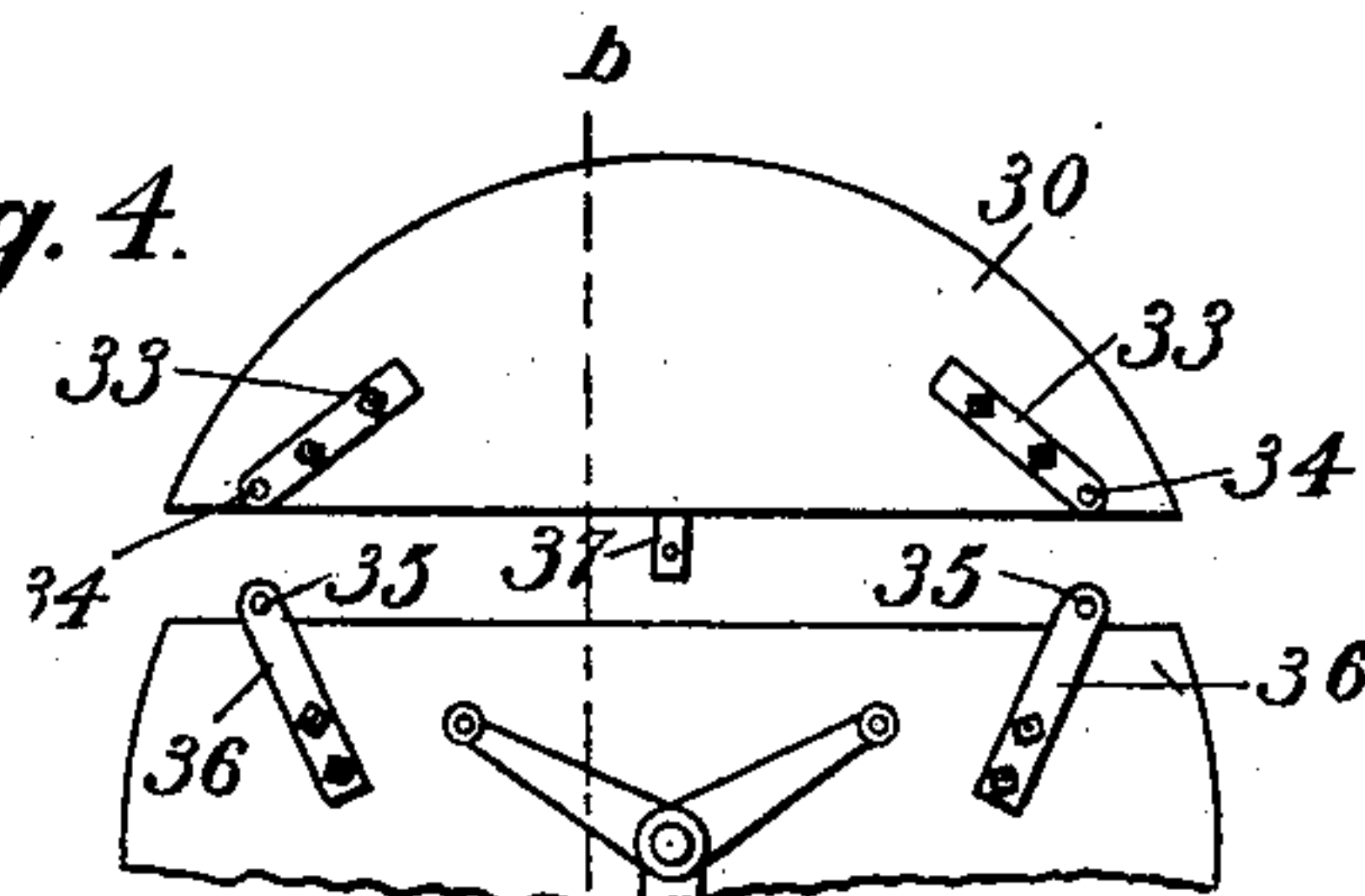
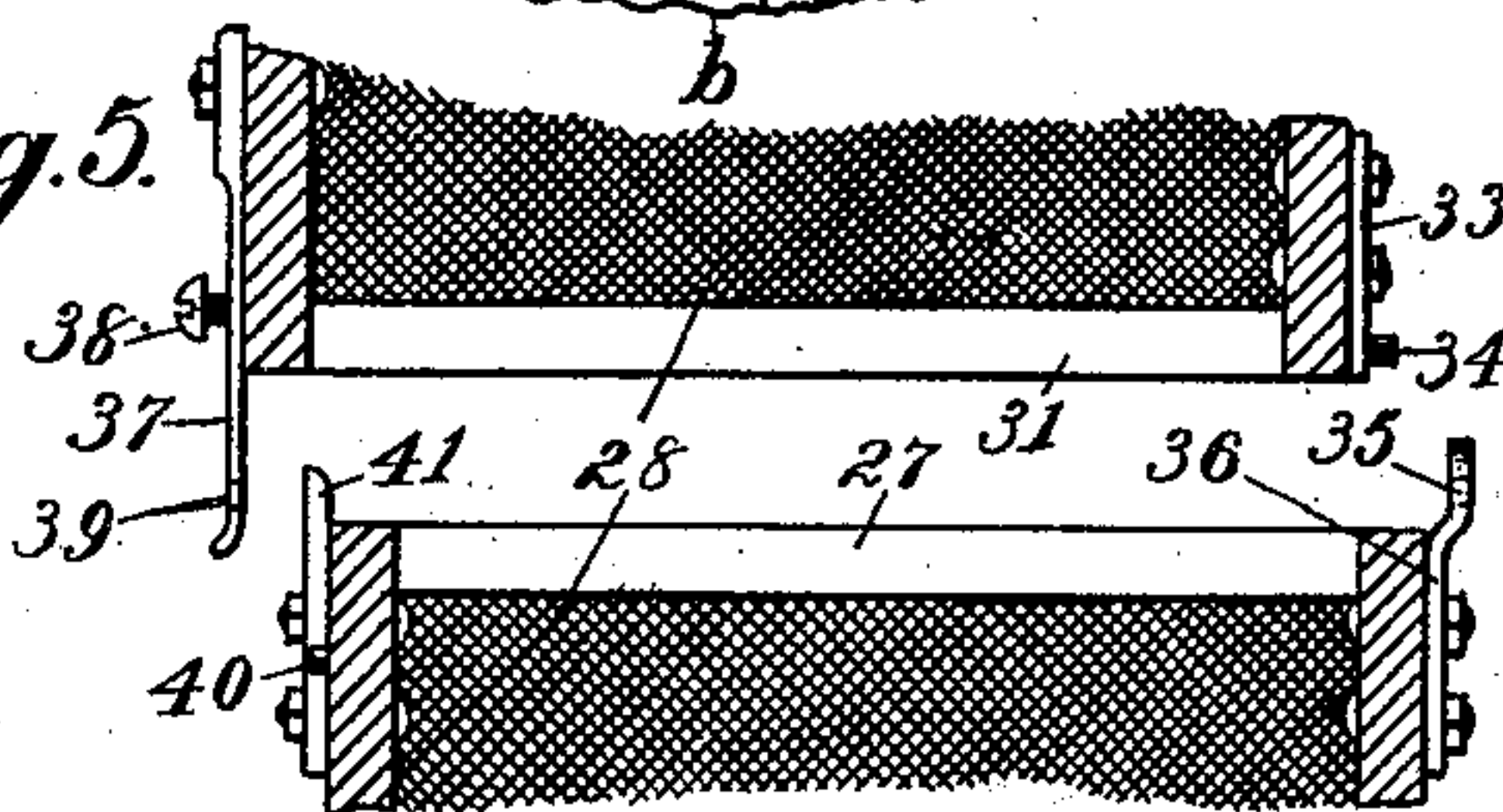


Fig. 5.



Witnesses.

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2 Sheets—Sheet 2.

Fig. 6.

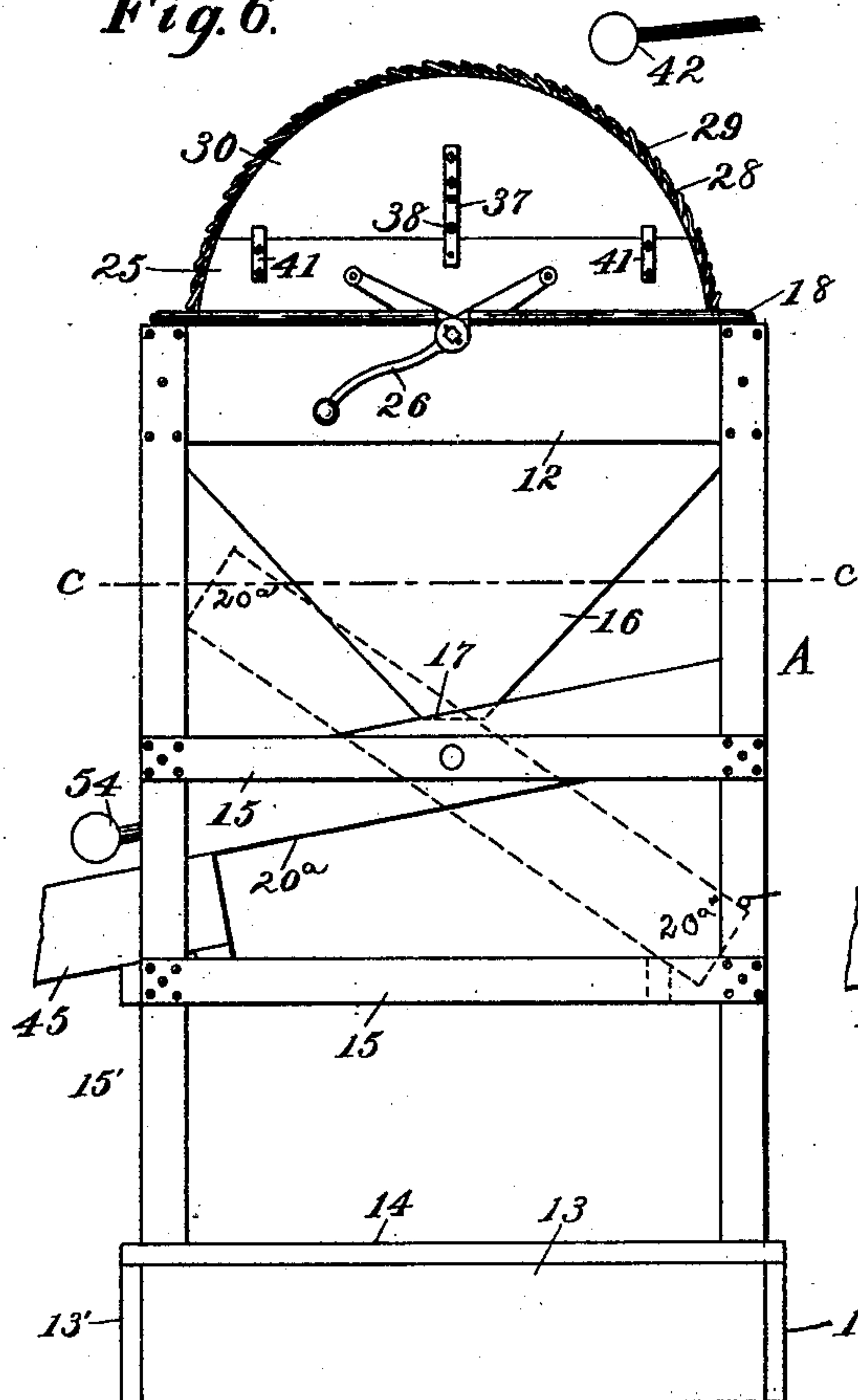


Fig. 7.

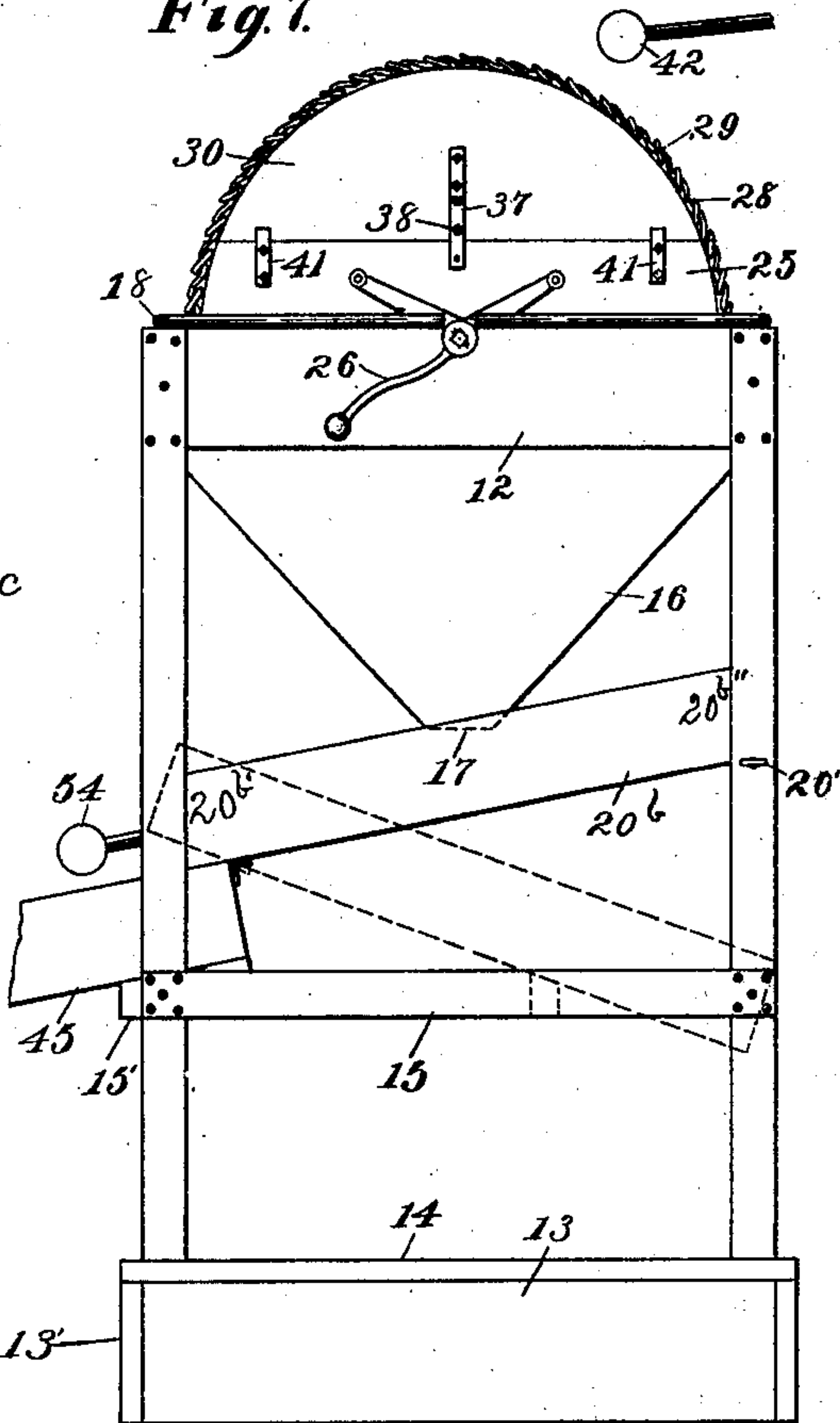
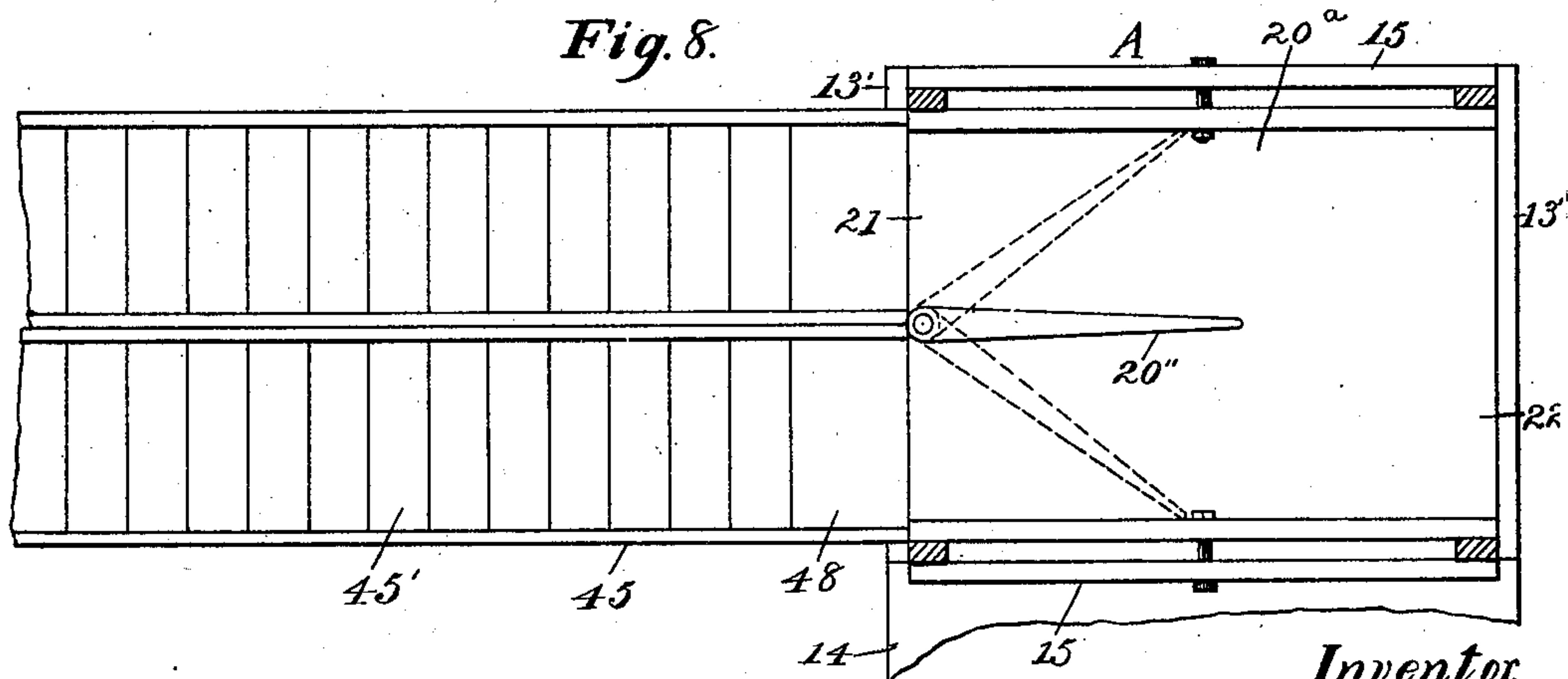


Fig. 8.



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UNITED STATES PATENT OFFICE.

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AMALGAMATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 678,183, dated July 9, 1901.

Application filed October 30, 1897. Serial No. 656,930. (No model.)

To all whom it may concern:

Be it known that I, ALBERT H. JOCELYN, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Amalgamating Apparatus, of which the following is a specification.

This invention relates to amalgamating apparatus particularly adapted for placer-mining purposes; and one object of the invention is to provide an improved apparatus of this character by means of which the separation of gold from sand and dirt is facilitated, while at the same time a larger amount of sand and dirt is handled and gold secured at each operation than is usually the case with the pans or hand appliances generally in use.

A further object of the invention is to provide an improved apparatus of this character one part of which is adapted to separate or screen the fine pay dirt or sand from the nugget pebbles and stones contained in the same, so that the finer parts can be discharged in condition for amalgamation directly into or onto an amalgamating surface or substance which comprises the other part of said apparatus and which is adapted to receive such pay dirt or pulp and thoroughly and effectively amalgamate the gold thereof, and which improved apparatus is simple in construction, but durable and effective in operation and involves a novel construction and assemblage of parts which can be quickly assembled and disassembled, whereby the apparatus can be readily transported.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side view of one construction of this improved apparatus with a part thereof broken away. Fig. 2 is a top view of the same. Fig. 3 is a vertical sectional view taken in line *a a*, Fig. 2, with a part of the amalgamating part of the apparatus broken out. Fig. 4 is a detail view of the upper part of the rotating drum and one form of means for securing the drum-cover in position. Fig. 5 is a transverse sectional view thereof, taken in line *b b*, Fig. 4. Figs. 6 and 7 are side views of other organizations of this improved apparatus; and Fig. 8 is a cross-sectional view of the apparatus, taken in line *c c*, Fig. 6, but show-

ing a plurality of amalgamating-troughs leading from the main discharge-trough.

Similar characters of reference designate corresponding parts in the different figures of the drawings.

In the preferred form thereof herein shown and described this amalgamating apparatus comprises suitable framework (designated generally by A) shown herein comprising a series of uprights (preferably four in number) connected at their upper ends by cross-bars 12. These uprights are also preferably connected at their lower ends by cross-bars 13, two of which, as 13', project at one side to support a step or platform 14 for the operator when the uprights are of considerable height. These uprights are also braced by braces 15, one of which, as 15', constitutes in this structure supporting means for the amalgamating-trough hereinafter described. The uprights and their connecting cross-bars and braces are preferably secured together by some suitable fastening means—such, for instance, as screws—whereby the framework can be readily disassembled and reassembled to facilitate transportation thereof. By this construction it will be readily seen that the framework is, to a certain extent, what is sometimes designated as a “knockdown” framework.

Carried by the framework is a suitable removable hopper 16, shown funnel-shaped and provided with a discharge-mouth 17 at its lower end. This hopper is provided with an outwardly-extending flange or bead 18 entirely around its upper edge and which forms a means for removably supporting said hopper in position on the cross-bars 12 of the framework and in position to receive and guide the pulp when discharged from the drum. The hopper-mouth 17 opens immediately above an inclined main or primary discharge-trough, preferably extending from one side to the other of the framework, and which trough is provided with a pair of discharge-mouths. In the organization shown in Fig. 6 this primary or main trough 20^a is adjustable or shiftable, and for this purpose it is pivoted to the framework substantially midway of its length. In the organization shown in Fig. 7 the trough 20^b is hinged or pivoted adja-

cent to one end thereof to the framework or, as herein shown, to the amalgamating-trough, hereinafter described. Both of these troughs 20^a and 20^b have their discharge-mouths 20^{a'} and 20^{a''} and 20^{b'} and 20^{b''}, respectively, located at opposite ends thereof, whereby when the trough is in position shown in full lines, Figs. 6 and 7, the material discharged from the drum and hopper will be directed in the amalgamating-trough, but when in the position shown in dotted lines in said figures the material discharged from the drum and hopper will be directed away from said amalgamating-trough. This main discharge-trough may be maintained in its inclined discharging positions by any suitable means, such as a removable pin or bolt 20'. In the structure shown in Figs. 1 and 2 the trough 20 is fixedly secured in position with one discharge-mouth, as 21, at the lower end thereof, while the other, as 22, is intermediate its ends, the latter communicating with a supplemental discharge-trough 23, which leads from such mouth or opening 22 to any desired position on the framework—as, for instance, to the rear thereof. These troughs can be readily disassembled from the framework when desired. Disposed within this hopper is a removable rotatable sand or pay-dirt receiving drum 25, provided with journals one at each end thereof, having bearings in a pair of the cross-bars of the framework, one of said journals being provided with a removable handle or crank 26 for rotating said drum. It will be understood that the drum may be rotated by power, if preferred, suitable clutch mechanism being provided to stop the rotation of the drum at the proper time. In the preferred construction shown this drum comprises two segmentally-shaped end walls connected by a series of radially-extending apertured cross-bars 27, which form braces for said end walls, said cross-bars constituting an additional means for breaking up the dirt thrown into the drum, while the apertures thereof permit the passage of the dirt and water, and thereby prevent the clogging of the sand adjacent to such cross-bars. The drum is provided with an inner screen 28, of any suitable mesh, extending from end to end of the same and constituting its periphery throughout the curvilinear part of said drum. To prevent the breaking or bulging of this screen 28 when the drum is loaded and in operation, said drum may be provided with suitable reinforcing means, which may consist either of longitudinally or transversely extending cross-bars, or both, as found desirable; but in the preferred construction shown this reinforcing means comprises an outer or supplemental screen 29, preferably of larger mesh than the inner screen, and which outer screen constitutes the outer periphery of the drum, being secured to the ends thereof in any suitable way. By means of this reinforcing means it will be seen that the main drum-screen 28 is thoroughly protected at all points

thereof. This rotatable drum is provided with a removable cover 30, which likewise comprises a pair of segmental end walls connected by a series of cross-bars 31, two of which are adapted to rest on a pair of the cross-bars 27 when the cover is in position. These cross-bars 31 are likewise apertured, so that when the cover is in position communicating passages 32 are formed between two of the cross-bars of the cover and the two cross-bars of the drum-body, which form supports for said cover. The periphery of this cover throughout the curvilinear part thereof is formed in a similar manner to the drum-body periphery, so that when the cover is in position a substantially integral double screen of different meshes is provided for the pay dirt or sand, one acting as a protector for the other. As one means of removably securing this cover in position the same is shown provided at one end thereof with a pair of inclinedly-disposed straps 33, having projections 34, adapted to enter a pair of apertures or openings 35, formed in a similar pair of straps 36, carried by the drum-body. The opposite end of the cover is provided with one member of a suitable fastening means and shown herein as an apertured spring-bar 37, the aperture thereof receiving a guide device 38 for limiting the outward movement of said bar, while the lower end of said bar is provided with an opening 39 for the reception of a suitable projection 40, carried by the drum-body, said body being also provided with a pair of upwardly-extending lugs 41 for engaging the outer side of the cover at the fastening end thereof, thereby to prevent endwise-shiftable movement of said cover. By this construction of drum body and cover it will be seen that the cover can be readily removed for the purpose of loading the drum with dirt and as readily replaced by simply inserting the projections 34 into their openings 35 and springing the fastening-bar 37 into position. When the drum is loaded with dirt, it is preferable to supply the same with water in order to assist the breaking up of such dirt and also assist its passage through the mesh, and for this purpose a water-conduit 42 is disposed in position to have the discharge end thereof immediately above the drum-screen, whereby a constant play of water can be supplied to said drum during the rotation thereof.

To amalgamate or catch the gold, any suitable means may be used; but in the preferred form of apparatus one or more troughs 45 are preferably used. Each of these troughs may be of any desired width, and the drum and main trough 20 may be so constructed that they will conform to the width of one trough or to the width of a number of troughs disposed side by side, two of such troughs being shown disposed side by side in Fig. 8, whereby in the latter case suitable means, such as a gate 20'', may be used for deflecting the pulp into one or more amalgamating-troughs while

cutting it off from the others, thereby to permit the cleaning of one trough while the others are in operation. For the purposes of this specification a description of one of these troughs is deemed sufficient to illustrate the operation of the apparatus. This trough 45, which can be readily removed, is inclinedly disposed in position with its upper end resting on the brace 15' and below one—as, for instance, the discharge-mouth 21 of the main discharge-trough 20—whereby when the pulp or the sand and the water penetrate the mesh of the drum and are discharged from the mouth of the hopper into the trough 20 they will flow from such trough 20 into the amalgamating-trough 45, where the flakes and particles of gold will be amalgamated. This amalgamating-trough may be of any desired construction, carrying, for instance, a series of riffles containing mercury, or may be provided with other suitable means for amalgamating the gold; but in the preferred construction shown it is provided with a series of amalgamating-plates. For supporting these plates the trough is preferably provided with a suitable track 46, its lower end terminating adjacent to a pair of mercury-receiving receptacles 47, carried at the lower end of the trough and below the plane of the plates to receive the mercury leaving the plates and to also afford an additional means for catching the gold. The upper end of this trough is provided with a pulp-receiving surface or bed-plate 48, which receives the pulp from the trough 20 and conveys it onto the amalgamating-plates, which in the preferred construction thereof herein shown and described comprise a series of removable plates 45', having amalgamable surfaces, said plates being maintained in position by some suitable form of locking means. In the construction shown each of these plates 45' is provided with a series of depending flanges 49 and 50 and an upwardly-extending flange 51, whereby when in position a pair of depending flanges 49 of one plate is adapted to engage the upwardly-extending flange 51 of an adjacent plate, whereby said plates are locked in position relatively to each other, the depending flange 50 of each plate being supported directly on the track 46. The plates are locked in position on the track by any suitable means—for instance, by means of a fixed bar 52 and locking member 53. On the removal of one of said plates—as, for instance, the upper plate—the other plates can be shifted upwardly and a new plate disposed at the lower end of the trough. These plates, together with the supporting means therefor, may be constructed, if desired, in a similar manner to that shown and described in my prior application, Serial No. 649,416, filed August 25, 1897.

To assist the passage or flow of the pulp over the amalgamating surface or plates, a water-conduit 54, fed from any suitable

source, is shown in position above the pulp-receiving bed or surface 48.

After the discharge of the pulp through the mesh of the rotary drum it is desirable that the stones and other matter too coarse for the mesh of the drum should be discharged at some suitable place or into a suitable receptacle, so that any nuggets which may be with the dirt can be readily removed, while at the same time the drum will be left in condition to receive its next supply of pay-dirt. To accomplish this result without removing the drum each time to empty the same or without shoveling out the debris, the main discharge-trough is shown in two organizations of this apparatus as shiftable or adjustable, whereby by swinging the same into the position shown in dotted lines, Figs. 6 and 7, this result can be accomplished. In the construction shown in Figs. 1 and 2, however, a suitable shiftable deflector or gate is shown disposed in position adjacent to the discharge end or mouth 17 of the hopper and is adapted in one position to deflect the pulp into the forward end of the inclined trough 20, whereby it will flow over the amalgamating-surface, while in another position it is adapted to deflect the debris into the supplemental trough 23. In the preferred form thereof this deflector is shown comprising a plate 55, journaled in the side walls of the trough 20 and provided with a suitable handle 56 at the outside of the trough for reversing the plate at the proper time. Any suitable means may be used for maintaining this deflector in either of its positions. In the present construction a pair of removable pins 57 is used for this purpose.

From the foregoing it will be seen that in one construction of apparatus the adjustable trough constitutes both a means for receiving and deflecting the material, while in another construction of apparatus this receiver and deflector means comprises the trough and the gate or deflector 55 carried thereby.

The operation of this improved apparatus is as follows: The cover having been removed, the drum is supplied with pay-dirt, after which the cover is replaced and locked in position and the drum rotated, during which rotation water is discharged on and penetrates the drum in the manner above set forth, whereby the sand and dirt are transformed into pulp and assisted in penetrating the mesh of the drum and are then discharged by the hopper into the forward end of the main discharge-trough, the deflector 55 when this construction is used being in the position shown in full lines, Figs. 1 and 3, and the adjustable trough when this form of structure is used being in the position shown in full lines, Figs. 6 and 7, whereby the pulp is conveyed onto the amalgamable surface of the trough and the gold amalgamated by the plates thereof, the free pulp passing from the trough at its discharge end. After all of the pulp has passed from the drum the pins 37

are withdrawn, the deflector reversed, and the pins reinserted or the trough swung into the position shown in dotted lines, Figs. 6 and 7. The cover is then removed from the drum
 5 and the same rotated partially around, whereby the dirt, pebbles, and nuggets remaining therein are discharged into the rear part of the primary trough and discharged therefrom or into the supplemental trough or conduit
 10 23, as the case may be, and from thence into any suitable receptacle, after which the drum can be reloaded and the operation repeated.

From the foregoing it will be seen that this apparatus provides a very simple, durable,
 15 and effective amalgamating device inexpensive to manufacture and transport and one which can be readily assembled and disassembled.

I claim as my invention—

20 1. The herein-described apparatus comprising framework; an inclined, shiftable trough carried thereby and having a pair of discharge-mouths and shiftable to deflect the material discharged thereinto in opposite directions;
 25 a removable hopper carried by said framework and having a discharge-mouth at the lower end thereof opening above said shiftable trough intermediate the discharge-mouths thereof; a rotary drum supported by
 30 said framework for rotation in said hopper, and comprising a pair of end walls, a series of radially-extending apertured cross-bars connecting said end walls, a shiftable cover and a differential-mesh screen periphery, said
 35 mesh being larger at the exterior than at the interior; and a water-discharge conduit disposed above said drum and in position to discharge into the drum during the rotation thereof, substantially as described.

2. In an amalgamating apparatus, the combination of framework; a rotary drum carried thereby and having a screen periphery; a primary shiftable trough disposed below said drum; a plurality of amalgamating-troughs disposed side by side and in position to have
 45 said primary trough discharge thereinto; and a shiftable device carried by said primary trough for cutting off one or more of said amalgamating-troughs during the operation of the remainder of said troughs. 50

3. In an amalgamating apparatus, the combination of framework; a rotary drum carried thereby and having a screen periphery; a shiftable trough having a pair of discharge-mouths for receiving material from said drum
 55 and for deflecting such material successively in opposite directions; a plurality of amalgamating-troughs disposed side by side adjacent to one of said discharge-mouths; and means carried by said shiftable trough for
 60 cutting off material from one or more of the amalgamating-troughs during the operation of the remainder of said amalgamating-troughs.

4. In an amalgamating apparatus, the combination, with framework, of a rotary drum
 65 having a differential-mesh screen periphery with the larger mesh located on the exterior, and also having a plurality of interiorly-located radially-extending bars, each provided
 70 with one or more openings, and a shiftable device located below said drum for deflecting the material received therefrom in different directions.

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