

E. F. PURDY & P. J. SPEICHER.

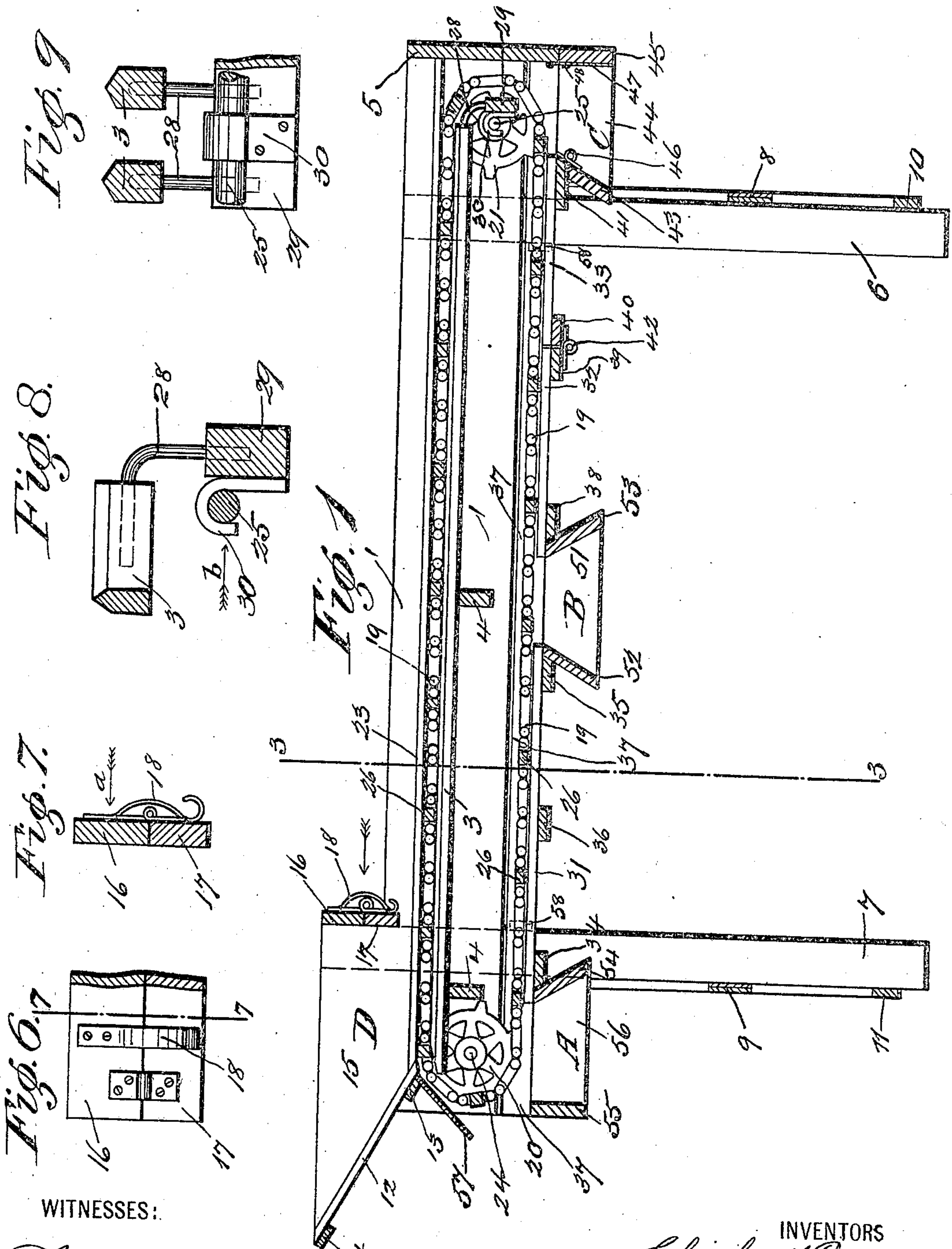
POTATO SORTING MACHINE.

APPLICATION FILED SEPT. 2, 1909.

952,213.

Patented Mar. 15, 1910.

4 SHEETS—SHEET 1.



WITNESSES:

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POTATO SORTING MACHINE.

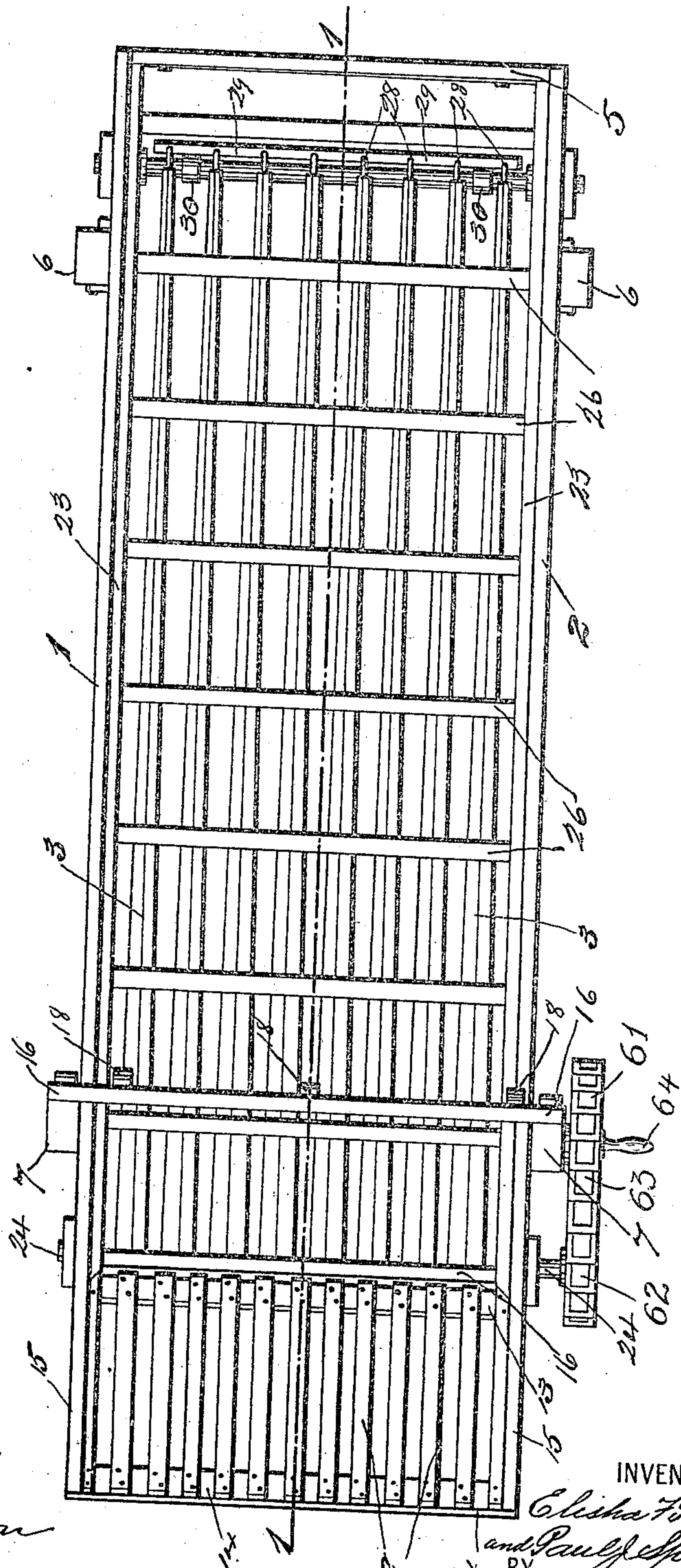
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4 SHEETS—SHEET 2.

Fig. 2.



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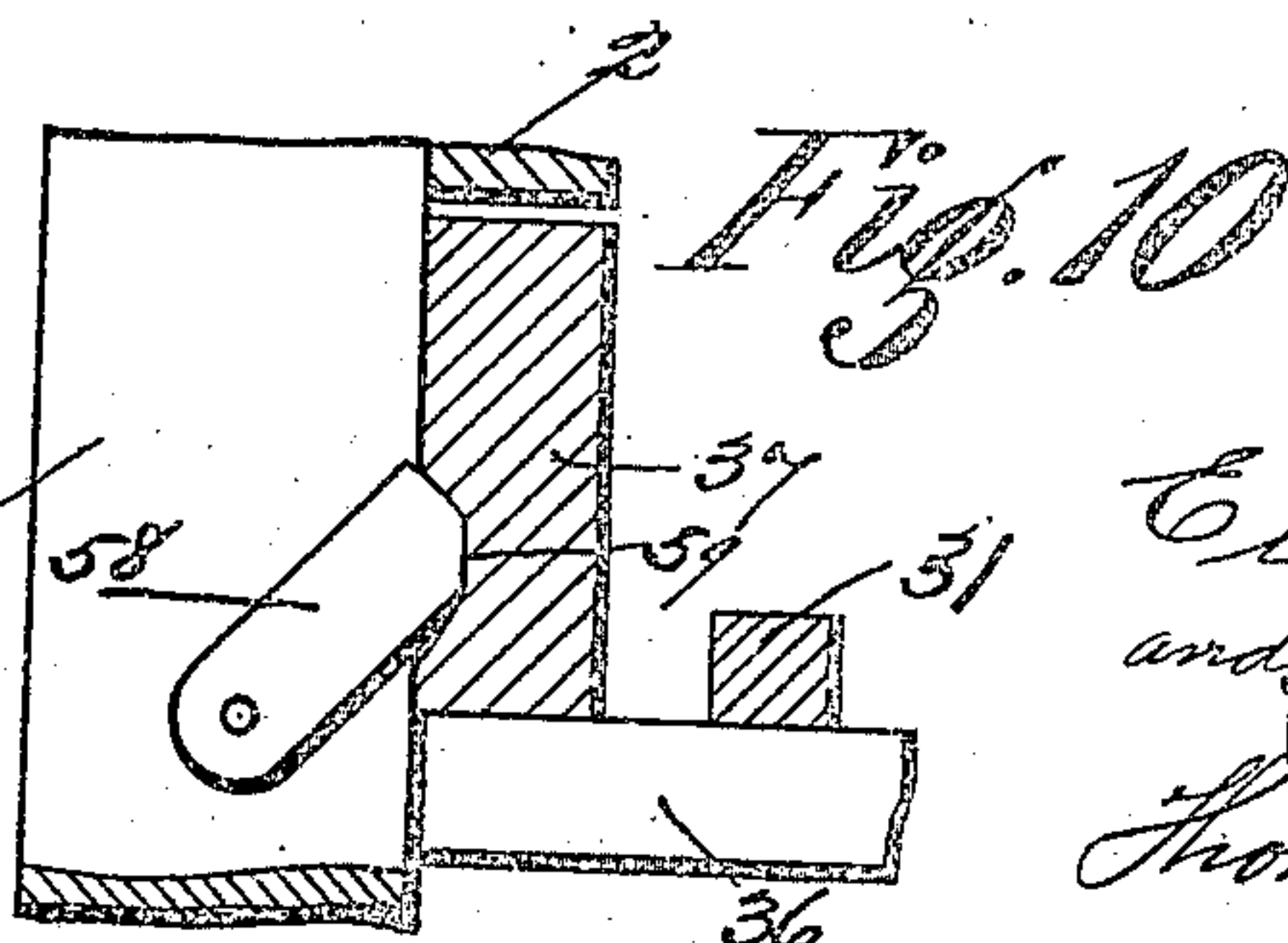
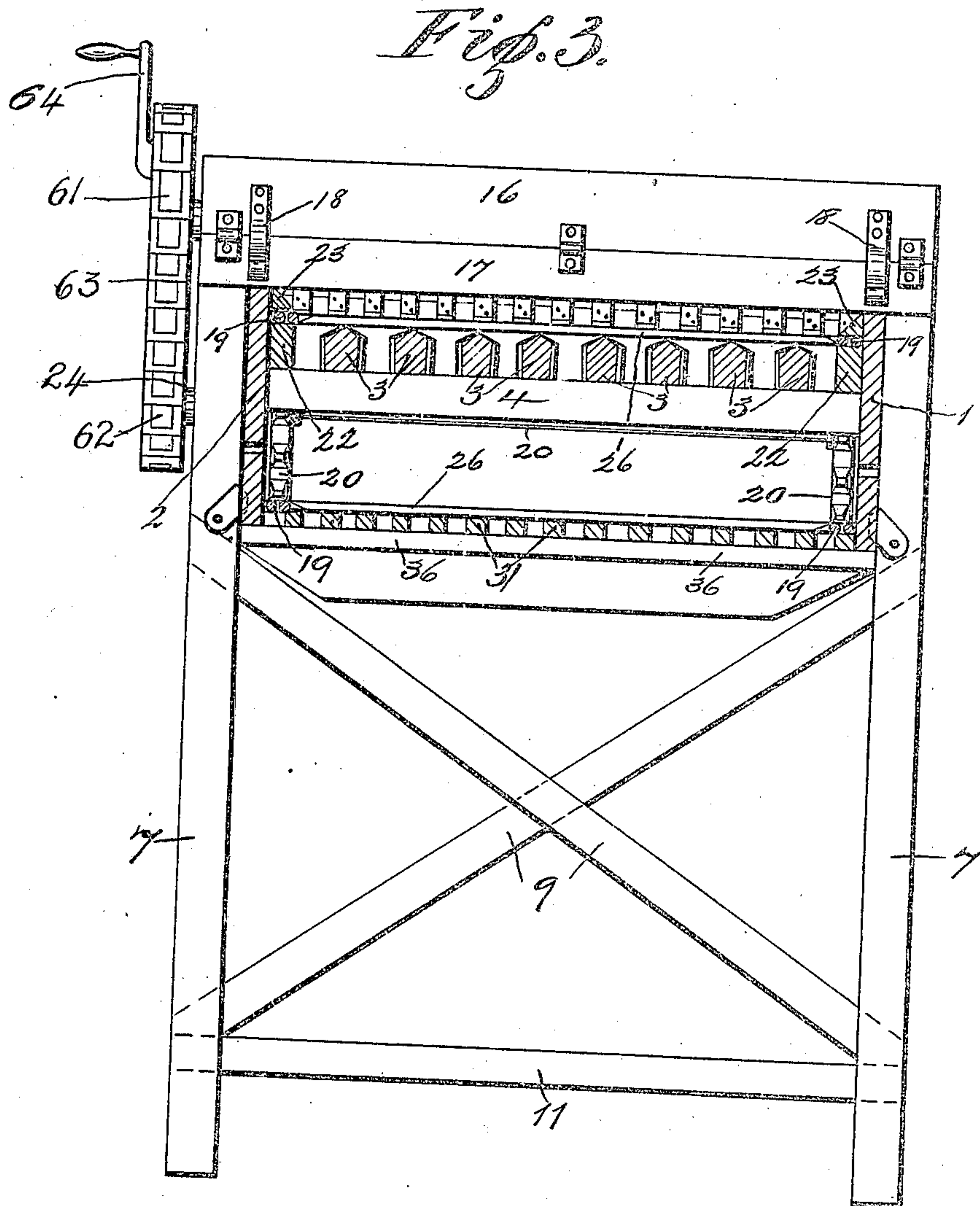
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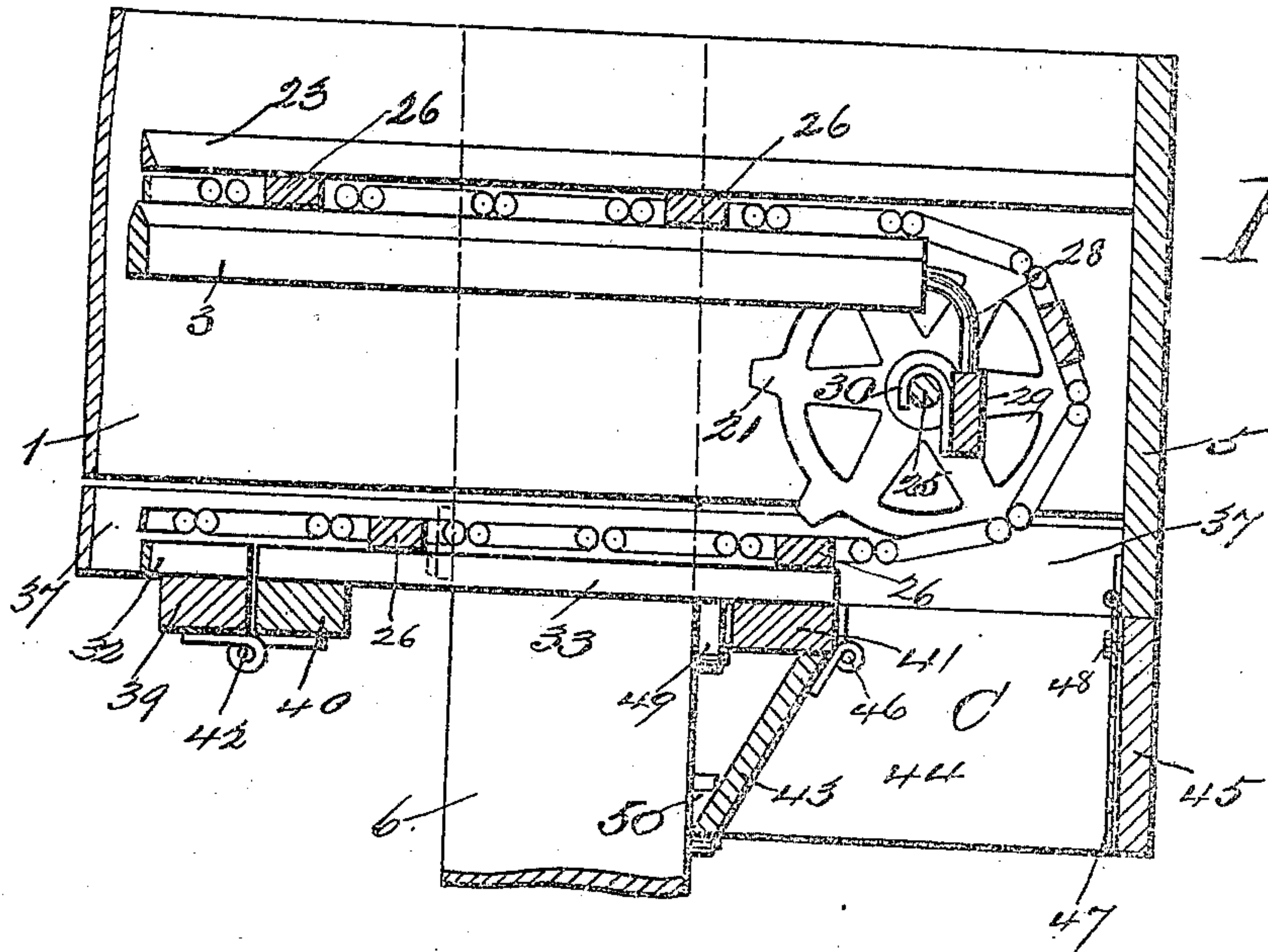


Fig. 4

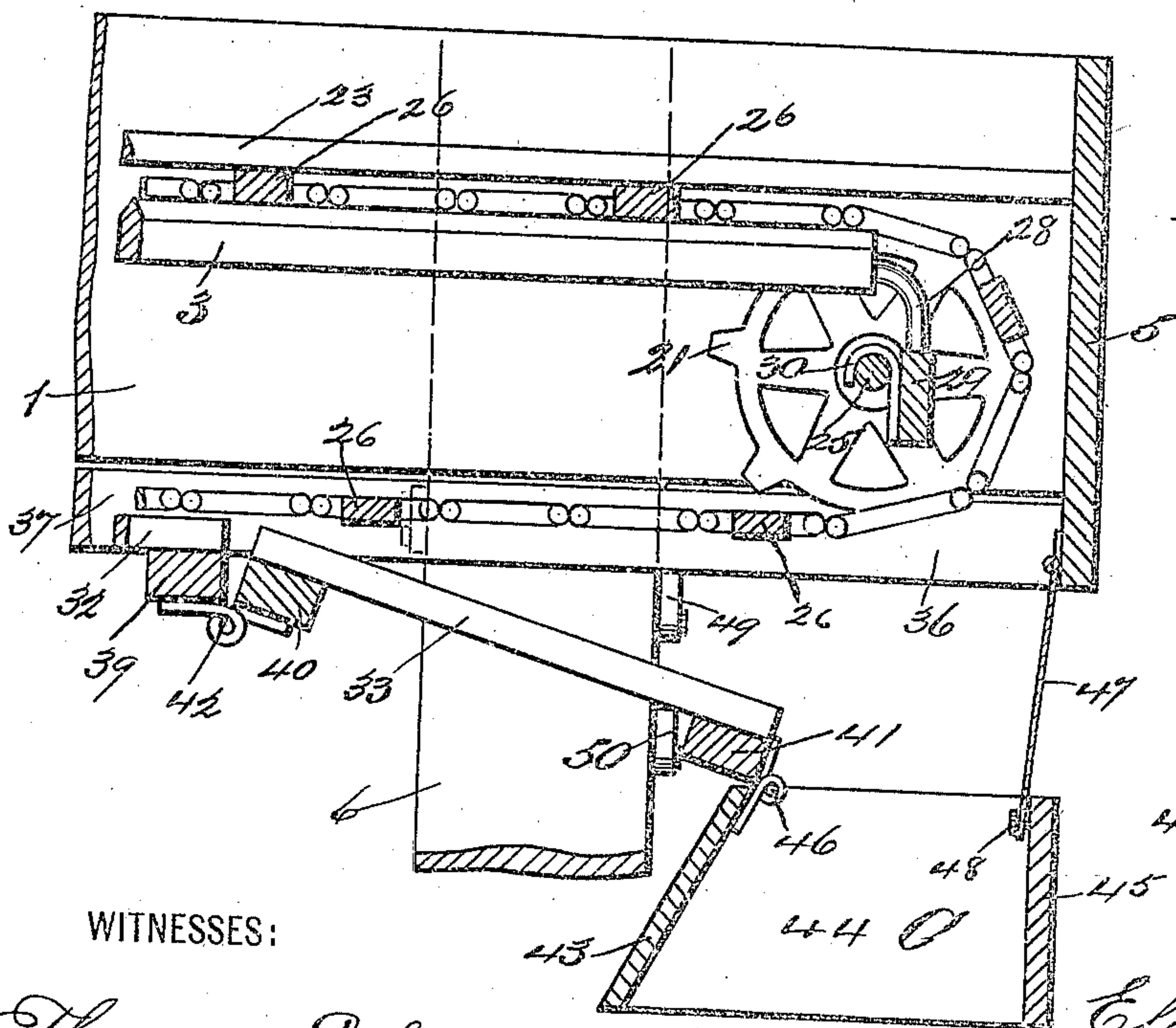
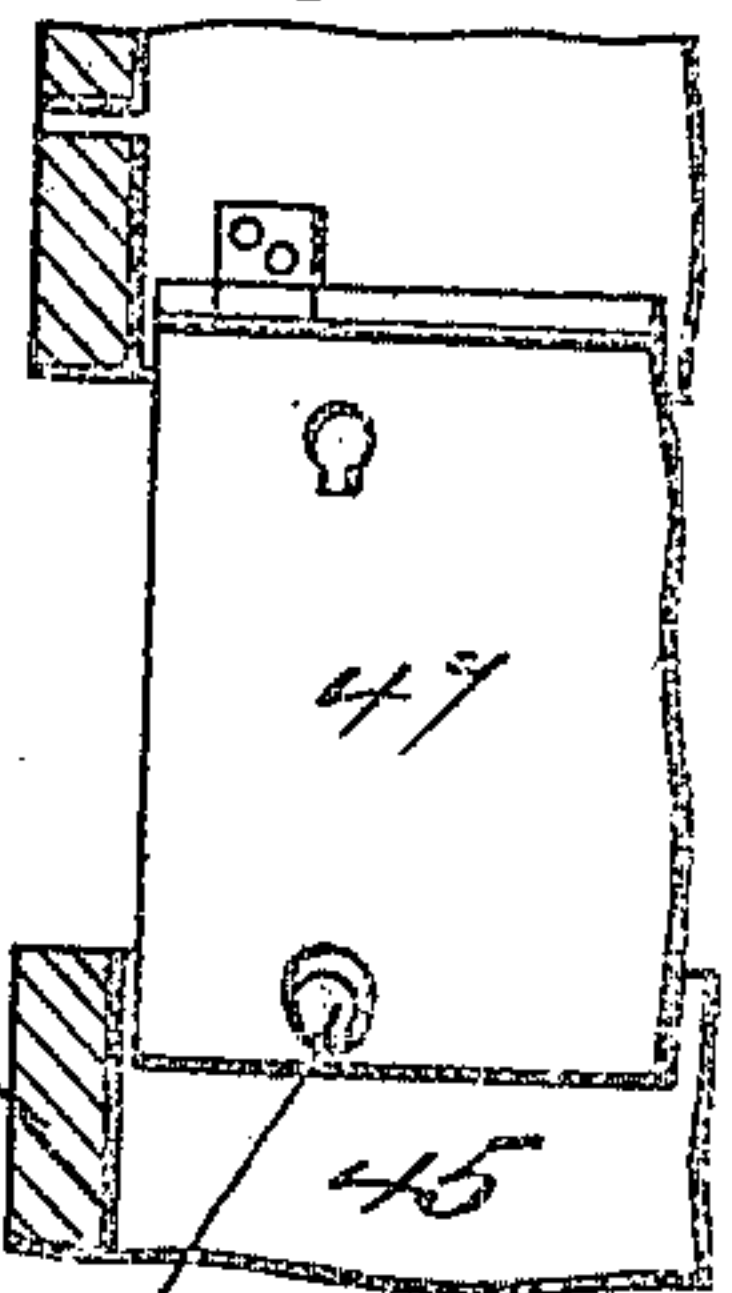


Fig. 5

Fig. 6



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UNITED STATES PATENT OFFICE.

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POTATO-SORTING MACHINE.

952,213.

Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed September 2, 1909. Serial No. 515,967.

To all whom it may concern:

Be it known that we, ELISHA F. PURDY and PAUL J. SPEICHER, citizens of the United States, residing at Urbana, in the county of Wabash and State of Indiana, have invented certain new and useful Improvements in Potato-Sorting Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

Our invention relates to improvements in potato sorting machines hereinafter described in the specification and particularly pointed out in the claims.

The object of this invention is to provide a machine of simple construction that will effectually separate the different sizes or grades of potatoes, and deposit each size or grade upon receiving grates from which they are swept off and deposited into different receptacles; also, to provide means for separating dirt and other foreign matter from the potatoes before depositing them into their respective receptacles; also, to provide means for removably securing the dirt separating grates, whereby said dirt separating grates may be readily removed from under the trough of the machine for the purpose of cleaning, and after cleaning to be returned to the machine and quickly secured in position. We attain these objects by means of the machine illustrated in the accompanying drawings in which like numerals of reference designate like parts throughout the several views.

Figure 1. is a longitudinal sectional elevation taken along the line 1—1 in Fig. 2; Fig. 2. is a top view of the same; Fig. 3. is an enlarged transverse sectional view taken along the line 3—3 in Fig. 1; Fig. 4. is an enlarged detail broken sectional view of the rear portion of the machine showing the dirt separating grate in normal position; Fig. 5. is a similar view showing said dirt grate dropped at one end, or inclined; Fig. 6. is an enlarged detail of the spring gate of the potato hopper, looking in the direction of the arrow "a" in Fig. 7; Fig. 7. is a transverse section of the same taken along the line 7—7 in Fig. 6; Fig. 8. is an enlarged broken detail sectional view of the rear portion of a potato sorter bar, showing the bend or elbow supporting the rear end of the bar and the bar for supporting the bend or elbow; Fig. 9. is an end view of the same, looking in the direction of the arrow "b" in Fig.

8; Fig. 10. is an enlarged detail sectional broken view of a portion of one side of the machine showing the grate fastening means; and, Fig. 11. is a broken view of a portion of the rear end of the apparatus showing a portion of the rear chute and the fastening means thereof.

The following is a description of our invention which is in such concise, clear, and exact terms as to enable others skilled in the art to which it appertains to make and use the same.

The main trough or frame of this apparatus is composed of the longitudinally extending sides 1 and 2, the bed composed of the potato sorter bars 3, the forward and the intermediate cross rails 4, which are secured at their ends to the side rails 1 and 2 and upon which cross rails said potato sorter bars 3 rest, to be supported at their forward end portions and at their intermediate portions, and the end rail 5. The side bars 1 and 2 of the trough are provided with the supporting legs 6 and 7, which latter are braced by the diagonal ties 8 and 9, (see Figs. 1 and 3) and the cross rails 10 and 11.

The hopper grate bars 12 are secured at their ends to the battens 13 and 14, and the latter are secured at their ends to the hopper sides 15. The stop bar 16 is secured at its ends to the front edge portion of the hopper sides 15. The hopper gate 17 is hingedly connected to the bottom portion of the stop bar 16 to swing outwardly, and the gate springs 18 yieldingly retain said gate in its vertical closed position, and said gate is provided for the purpose of permitting the largest sized potatoes to pass from the hopper without injury when engaged by the flights 26 of the conveyer chain 19 in its movement from the hopper under the stop bar 16. The endless conveyer chains 19 extend from the forward sprocket wheel 20 to the rear sprocket wheel 21, by which latter, said chain is carried and the top portion, or top half, of said chains slide upon the chain guide bars 22, secured to the sides 1 and 2. The upper guide bars 23 are situated above and parallel to the guide bars 22, and said upper guide bars are provided for the purpose of preventing said chains being moved upwardly off the guide bars 22. The sprocket wheels 20 and 21 are secured on the shafts 24 and 25, which latter are journaled at their ends in suitable bear-

ings formed in the sides 1 and 2. The flights 26 are situated at suitable intervals apart along the conveyer chain 19 and are secured at their ends to said conveyer chains, and said flights bear upon and are drawn over the top sides of the potato sorter bars 3; so that as each flight passes over the sorter bars 3, a quantity of potatoes of various sizes is drawn from the hopper over the spaces situated between the sorter bars 3 until they reach a width of space that will permit them to drop through, thereby grading the potatoes according to size.

The potato sorter bars 3 are formed larger or wider at their forward ends or those portions of the bars situated under the hopper, and taper regularly toward their rear smaller ends, so that the spaces between these portions of the sorter bars situated under the hopper are narrower than the spaces between the rear or smaller ends of the bars, thus the spaces between the sorter bars 3 gradually increase in width from the front portion of the sorter bars to their rear portions. The smaller potatoes will therefore drop through the smaller spaces between the forward portions of the sorter bars and the larger potatoes will pass along the sorter bars until they reach a space sufficiently wide to permit them to drop through to the lower grates situated under the sorter bars 3. The sorter bars 3 rest upon and are supported by cross bars 4 at their intermediate and front end portions, and the smaller rear ends of the said bars are each provided with the elbows 28, which elbows are secured to said sorter bars and extend over rear sprocket wheel shaft 25 and downwardly to the cross bar 29 to which they are secured and by which they are supported. The supporting bar 29 is provided with the hooks 30 situated near the end portions of the supporting bar 29 and said hooks are adjusted to be hooked over the rear sprocket shaft 25 to support the cross bar 29.

The lower grate bars are composed of a forward section 31, a rearward section 32, and a rear hinged section 33, all of which are situated directly under the sorter bars 3 and said grate bars are provided for the purpose of receiving the potatoes as they fall through the sorter bars 3 and also, for the purpose of separating dirt or other foreign substance from the potatoes before they are deposited into their respective receptacles. The grate bars 31 like the grate bars 32 are situated in parallel relation to each other, and the spaces between them are sufficiently narrow to prevent the smallest potatoes of the first grate from passing between them, but sufficiently far apart to permit the dirt that may be loosened and removed from the potatoes to fall freely through the spaces

between them. The grate bars 31 are secured on and supported by 34 and 35, and the intermediate batten 36 and said grate bars are arranged at their proper distances apart and in parallel relation to each other. The battens 34, 35 and 36 are secured permanently at their end portions to the side bars 37. The grate bars 32 are secured to the battens 38 and 39, which latter are also secured at their end portions to the side bars 37. The grate bars 33 are secured to the battens 40 and 41, and the batten 40 is hingedly connected to the batten 39 by the hinge 42. The rear end chute is composed of the dirt deflector portion 43, the said portions 44 and the vertical back portion 45. The rear end chute is hingedly connected to the batten 41 by the hinge 46 and the vertical back 45 thereof is connected to the back 5 by the back plate 47 and the button fasteners 48. The button fastener 49 supports the grates in the position shown in Figs. 1 and 4, that is, in the same plane as the grate 32 and the button fastener 50 supports said grate 33 in the inclined position shown in Fig. 5, while the plates 47 and the button fastener 48 support the end chute in the position shown in Fig. 5.

The largest potatoes are carried over the angles 28 that support the end of the sorter bars 3 and fall through the end chute into a receptacle on the floor situated under said chute. The grating 33 may be situated in an inclined position and the end chute lowered as shown in Fig. 5. This is done when it is desired to mix a portion of the intermediate grade of potatoes falling on the grate 33 with the largest grade of potatoes passed over the ends of the sorter bars 3 into the rear chute C. When it is desired to pass all of the intermediate grade of potatoes deposited on the grates 33 and 32 to the chute B the grates 33 are moved so as to be on the same plane as the grate 32 as shown particularly in Figs. 1 and 4, so that the flights in sweeping over the surfaces of the grates 32 and 33 will sweep the potatoes deposited thereupon into the intermediate space between the forward end of the grate bars 32 and the rear end of the grate bars 33 through the intermediate chute B into a suitable receptacle placed thereunder. Those potatoes deposited on the grates 31 will be swept to the forward end of said grate through the forward chute A into a suitable receptacle placed thereunder. The intermediate chute B is composed of the sides 51 and the front and rear dirt deflector portions 52 and 53 which are secured to the battens 35 and 38. The forward chute A is composed of the dirt deflector 54, the forward vertical side 55 and the side 56, all of which are permanently secured to the side rails 37.

A dirt deflector 57 is situated under the

grates 12 of the hopper and is provided for the purpose of preventing the dirt passing through said hopper grates, falling into the potato receptacle situated under the forward chute.

The side rails 37 are removably secured to the legs 6 and 7 by the buttons 58 which are pivotally mounted on said supporting legs and arranged to swing in a plane at right angles to said rails 37 in the grooves 59 formed in said rails.

A sprocket drive wheel 61 is connected to the sprocket wheel 62 secured on shaft 24 by a chain 63 and a crank 64 is secured on the sprocket wheel 61 by which to turn the latter.

The operation of this invention is as follows:—The potatoes to be sorted are placed in the hopper D and the crank 64 is turned to turn the shafts 24 and 25 and the sprocket wheels 20 and 21 secured thereon to cause the flights 26 to traverse over the sorter bars 3 and to carry the potatoes from the hopper A and draw them over the spaces between the sorter bars 3 till they reach a space sufficiently wide to permit them to fall through upon the grates 31, 32 and 33 situated under the said sorter bars. The flights 26 on their return movement over the grate move or sweep the potatoes lying on the surfaces of the grates 33 and 32 to the space situated between the ends of the grate bars 32 and 31, through which space and the intermediate chute B, they are dropped into the receptacle, and the smaller or first grade of potatoes deposited on the grate 31 are swept to the front end of the latter to pass through the front chute A. The larger potatoes which are too large to pass through the widest portions of the spaces between the rear ends of the sorter bars 3, pass over the elbows or angles 28 and drop through the rear chute into a receptacle thereunder.

We claim:—

1. In a potato sorting machine, the combination with a hopper, a stationary bed consisting of a series of longitudinally extending sorter bars tapering regularly from their forward ends to their smaller rearward ends, said sorter bars having their axes situated in parallel relation to each other, side rails extending from said hopper along the outer bar of said sorter bars and terminating at an end transversely extending rail connecting said side rails, sprocket shafts situated at or near the forward ends and rear ends of said sorter bars, sprocket wheels

on said shafts, a forward end and an intermediate transversely extending sorter bar supporting rail, and a rear supporting bar suspended and extending from the rear sprocket shaft, sorter bar extending elbows extending from rear smaller ends of said sorter bars over said rear sprocket shaft to said removable supporting bar, grates situated under and parallel to the top surfaces of said sorter bars, conveyer chains passing around said sprocket wheels, flights attached to said chains and arranged to traverse from the forward to the rear ends over the top surfaces of said sorter bars and from the rearward to the forward ends over the top surfaces of said grates, and means for turning said sprocket shafts.

2. In a potato sorting machine, the combination with a hopper, a gate situated at the delivering end of said hopper said gate yieldingly held closed, a stationary bed consisting of a series of longitudinally extending sorter bars tapering regularly from their forward larger ends to their rearward smaller ends, said sorter bars having their axes situated in parallel relation to each other, rails extending from said hopper along the outer bar of said sorter bars and terminating at an end transversely extending rail connecting said side rails, sprocket shafts situated at or near the forward and rear ends of said sorter bars, sprocket wheels on said shafts, a forward end and an intermediate transversely extending sorter bar supporting rail and a rear supporting bar suspended and extending from the rear sprocket shaft, sorter bar supporting elbows extending from the rear smaller ends of said sorter bars over the rear sprocket shaft to said removable supporting bar, grates situated under and parallel to the top surfaces of said sorter bars, conveyer chains passing around said sprocket wheels, flights attached to said chains and arranged to traverse from the forward to the rear ends over the top surfaces of said sorter bars and from the rearward to the forward ends over the top surfaces of said grates, and means for turning said sprocket shafts.

In testimony whereof we affix our signatures in presence of two witnesses.

ELISHA F. PURDY.
PAUL J. SPEICHER.

Witnesses:

HARLEY B. TILMAN,
ARNOLD C. SHIVELY.