No. 754,390. PATENTED MAR. 8, 1904.

J. RIDDLEBAUGH.

SORTING MACHINE.

APPLICATION FILED APR. 25, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

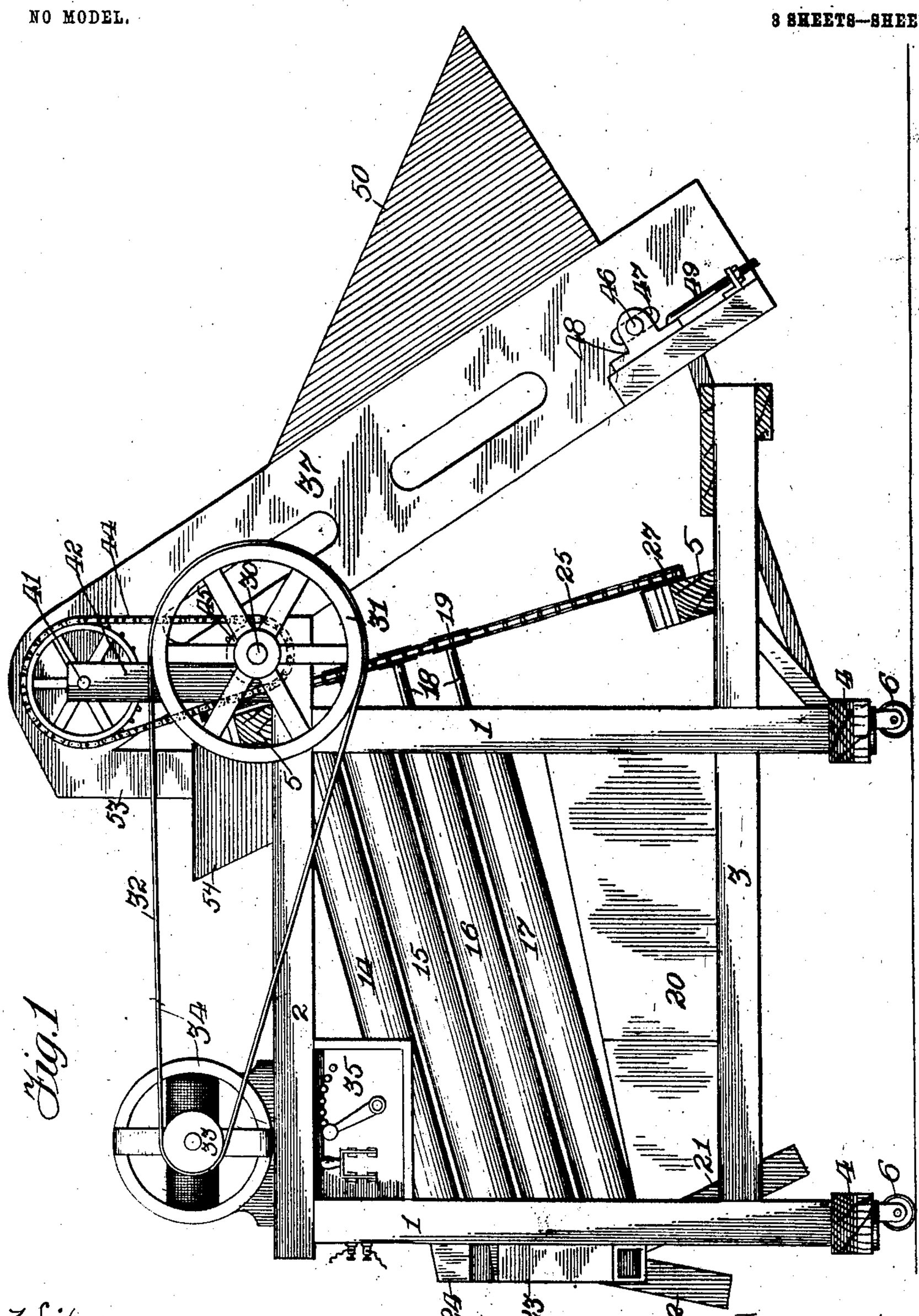

Fig. 1

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NO MODEL.

3 SHEETS—SHEET 2.

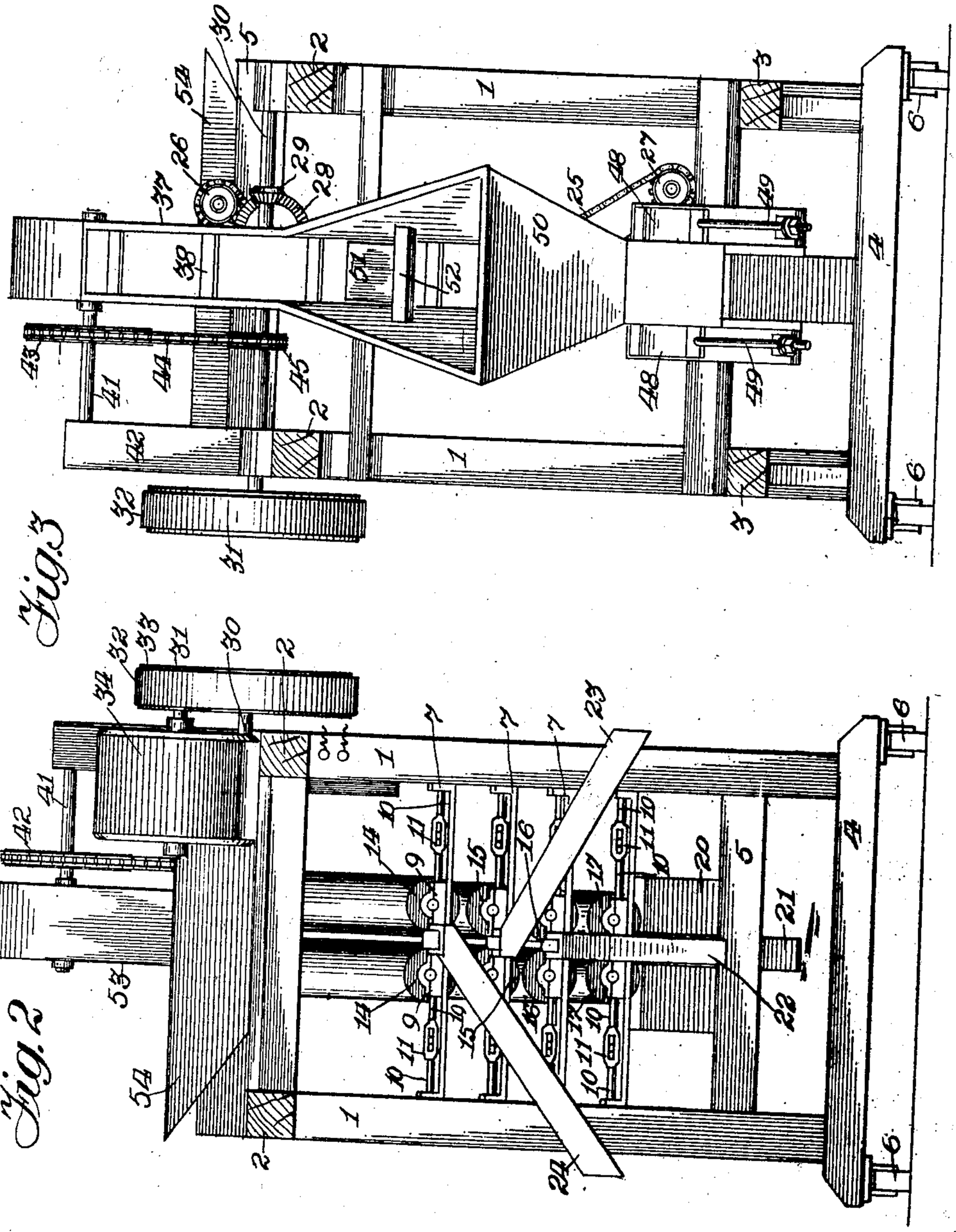

Fig. 3

Fig. 2

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5

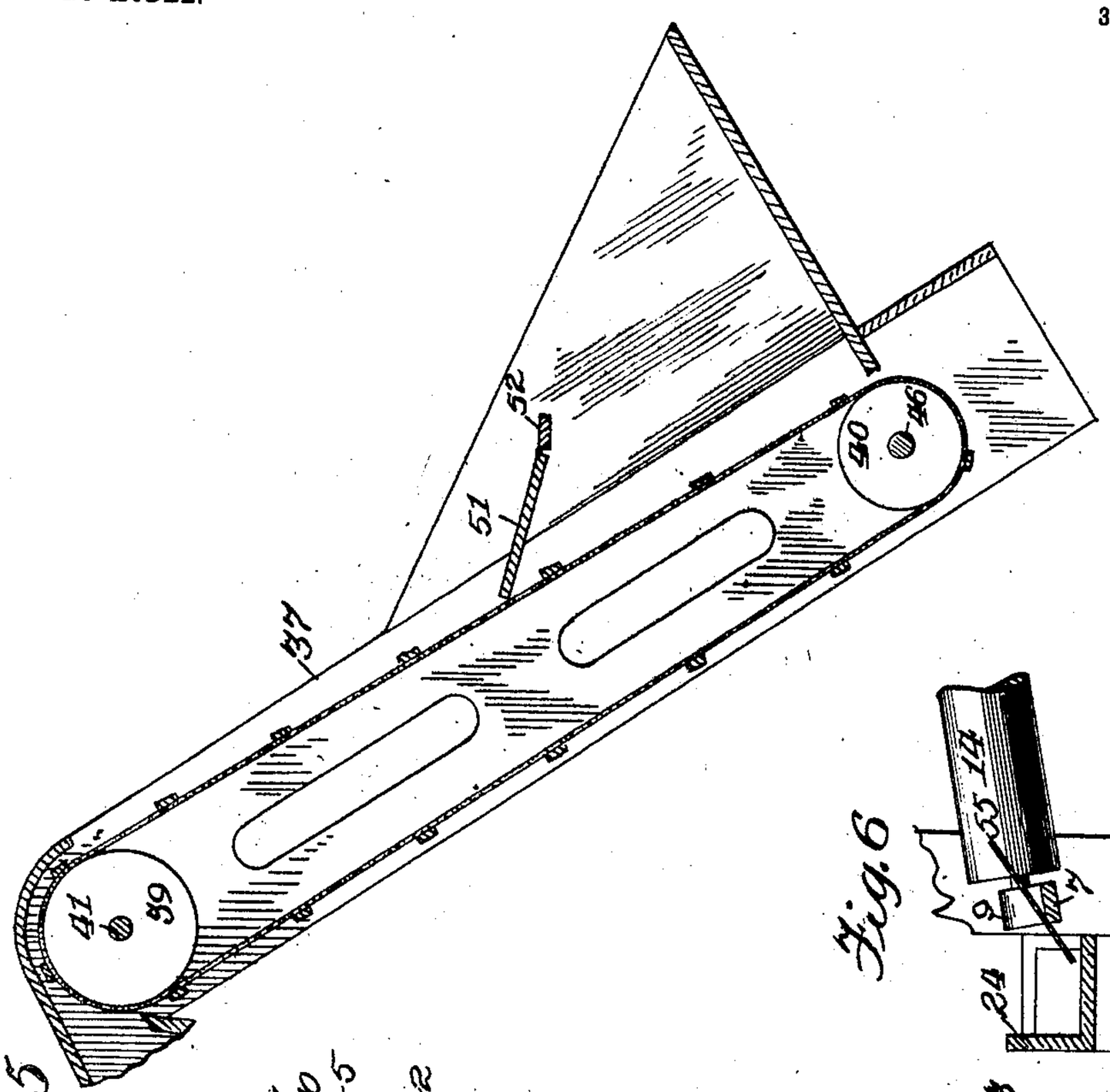
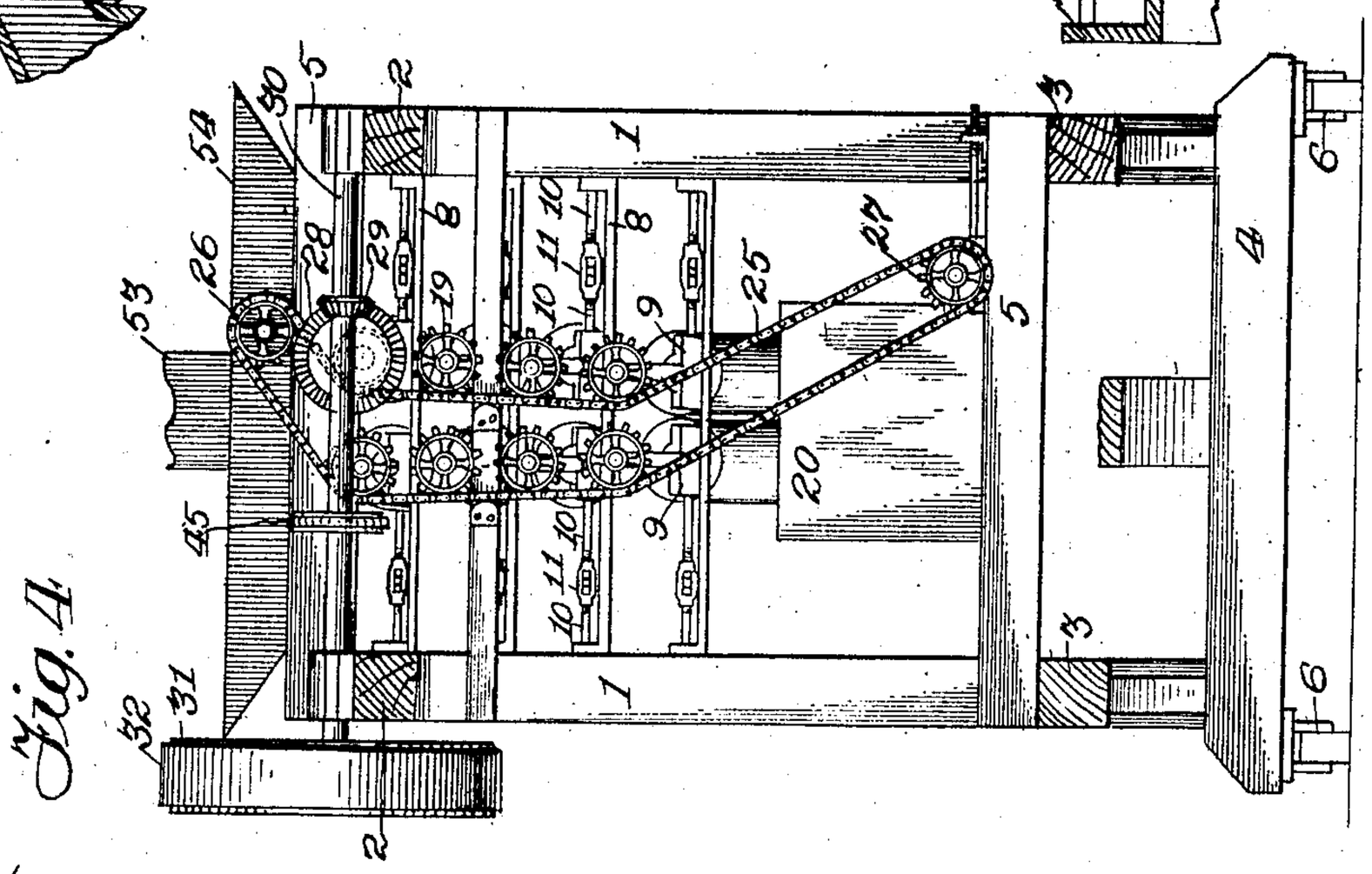


Fig. 6

Fig. 4



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No. 754,390. Patented March 8, 1904.

UNITED STATES PATENT OFFICE.

JOHN RIDDLEBAUGH, OF SHARPSBURG, PENNSYLVANIA, ASSIGNOR TO LUTZ & SCHRAMM COMPANY, OF ALLEGHENY, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

SORTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 754,390, dated March 8, 1904.

Application filed April 25, 1903. Serial No. 154,317. (No model.)

To all whom it may concern:

Be it known that I, JOHN RIDDLEBAUGH, a citizen of the United States of America, residing at Sharpsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Sorting-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in sorting-machines; and the object of the invention is to provide means for mechanically separating or sorting different-sized articles and delivering or discharging the several different sizes of the articles separately.

As practiced by me the machine or apparatus involved in the present invention has been employed for separating or sorting the different sizes of vegetables and has been particularly employed for the sorting of cucumbers or other vegetables into the different standard commercial sizes, though the invention is by no means confined to this particular use and may be employed in any connection where articles of different sizes are fed into the machine together to be discharged or delivered from the machine with each size separate.

In describing the invention in detail, however, I will refer to the same specifically in connection with that use which I have made of the same—namely, the sorting of cucumbers into several different sizes for pickling; and the object of the invention is to construct a machine of this character in which the cucumbers as they are received at the pickling factory in all sizes are fed into the machine and conveyed to a plurality of rolls arranged in stepped pairs, the pass between each pair of the rolls decreasing in size from the upper to the lower pair of rolls, whereby the cucumbers are sorted into several different sizes, and each size is delivered from the machine to a separate receptacle provided to receive the same. In the employment of a machine for this purpose I preferably construct the same portable, whereby it may be moved from one tank to another within the pickling establishment, and thereby very materially facilitate the work, not requiring the carting or carrying of the articles to any one point within the establishment, and in accordance with this principle I preferably provide a driving power on the machine, and in the present illustration I have shown a motor mounted on the machine, though I do not wish to be understood as confining myself to this mode of driving the machine, as it will be readily apparent that the machine could be driven through the medium of any suitable or desired power.

Briefly described, my invention may be said to comprise a supporting-framework in which is journaled a plurality of rolls arranged in pairs at an incline, one above the other. Means are provided for driving these rolls simultaneously, and separate delivery or discharging means is provided for each pair of the rolls. The framework supports an elevator or carrier, driving means being provided therefor, and the articles to be sorted are fed to the carrier from a hopper supported thereon. The carrier takes the articles from the hopper and delivers them to the rolls, where they are sorted into the different sizes, as will be more fully explained hereinafter. In connection with the carrier or elevating mechanism I preferably provide a regulator or knocker to prevent the overcrowding of the carrier.

Such other details as enter into my invention will be hereinafter more specifically described, and then particularly pointed out in the appended claims, and in describing the invention in detail reference will be had to the accompanying drawings, forming a part of this application, and wherein like numerals of reference will be employed to designate like parts throughout the different views of the drawings, in which—

Figure 1 is a side elevation of my improved sorting-machine. Fig. 2 is a rear elevation of the same. Fig. 3 is a front view thereof. Fig. 4 is a transverse vertical sectional view taken in front of the rolls with the elevator removed. Fig. 5 is a central vertical sectional

view of the elevator. Fig. 6 is a side view of a part of the delivery end of one of the rolls, showing a part of the spout and the delivery-slide.

In the invention as it has been practiced by me I have employed a skeleton framework for supporting the rolls and elevator or carrier. It will of course be evident that any desirable or suitable form of supporting-frame may be employed, and the machine may be made stationary instead of portable, as I have shown the same. A practical embodiment of the device is, however, shown herein, and in this illustration 1 represents the four vertical standards, uprights, or corner-posts of the frame; 2, the two upper side bars; 3, the two lower side bars; 4, the cross-bars, on which the corner-posts are supported, and 5 the cross-bars connecting the upper and lower side bars. The cross-bars 4 4 are preferably mounted on casters or rollers 6, so that the machine may be easily moved from one point to another within the building. The lower side rails 3 are extended out in front of the front corner-posts 1 for a considerable distance, and the upper side bars 2 are also extended slightly beyond the front corner-posts in order to conveniently support the elevator. Mounted between the rear corner-posts 11 and also between the front corner-posts 1 are supporting-bars 7 and 8, respectively. These supporting-bars are of the same form and are arranged one above the other, with their faces at an incline, and in practice I have conveniently attached or secured the bars by simply bending up the ends thereof at right angles, whereby to engage the corner-posts and permit of their being bolted or otherwise secured thereto. The supporting-bars 8 are arranged at a height on the posts considerably above the bars 7 on the rear corner-posts, and each of these bars carries a pair of bearings 9 to receive the spindles or shafts on the ends of the respective rolls. These bearings are made adjustable on the supporting-bars, whereby the width of the pass between each pair of rolls may be varied or regulated, and this may be accomplished in any desired manner, as by the provision of threaded adjusting-rods 10 and turnbuckles 11, as shown. In this illustration I have shown four pairs of rolls, (designated, respectively, 14, 15, 16, and 17.) These rolls are arranged at an incline, their forward ends being considerably above the rear ends, and the shafts or spindles 18 at the upper or forward ends of the rolls are extended some distance beyond the ends of the rolls and carry sprocket-wheels 19. The rolls, as stated, are arranged in pairs, one pair above the other, and the passes between each pair of rolls decrease in size from the upper to the lower pair of rolls, whereby the cucumbers or other articles of smaller size successively pass through the various pairs of rolls until they reach a pass too small for their passage therethrough, and they are then conducted by this particular pair of rolls to the delivery spout or chute. As I have herein shown four pairs of rolls, it is to be noted that a machine thus constructed would assort the cucumbers or other vegetables into five sizes. First, all cucumbers or other vegetables of a size small enough to permit their passage through between each pair of rolls would be discharged into a suitable receptacle 20, provided therefor underneath the rolls. The next larger size would pass through between rolls 14, 15, and 16, but would be prevented from passing between rolls 17 and would be carried down by these rolls to their lower end and discharged through spout 21 into a suitable receptacle to be provided therefor. The next larger size would be carried off by pair of rolls 16 and discharged through delivery spout or chute 22. The succeeding size would be carried off by pair of rolls 15 and discharged through spout or chute 23, and the fifth or largest size would be that size which was too large to pass between any of the pairs of rolls and would be carried down by rolls 14 and discharged through spout 24. Each pair of rolls is driven so that they turn outwardly or away from each other, and consequently the cucumbers or other vegetables are not drawn into the rolls; but, on the contrary, those sizes will go through the passes, fall until such time as they engage in a pass too small for them to pass through, when the rolls carry them to the lower end thereof and discharge them through the respective spout or chute. The rolls are driven through the medium of a sprocket-chain 25, which passes over the sprocket-wheels in a manner best seen in Fig. 4 of the drawings. This chain passes also over a sprocket 26, supported at a convenient point by the framework and at its lower end over a regulating-sprocket 27. Any desired form of tightening means is provided in connection with this sprocket 27, whereby the chain may be tightened or slackened, as required. The chain is in turn driven by mounting on the extended spindle of one of the upper pair of rolls a bevel-gear 28, which meshes with a smaller bevel-pinion 29, carried on the drive-shaft 30. This drive-shaft is mounted in suitable bearings carried by the supporting-frame and is provided at its one end with a belt-wheel 31 to receive the belt 32, passing over said wheel and over the belt-wheel 33 on the shaft of the driving-motor 34. As before stated, this is my preferred form of driving means where electricity is to be had, and when so constructing the machine as a portable one I may mount the controlling-switch 35 in the framework, as shown. It will of course be evident that where it is not desired to have a portable machine that the same may be driven by a belt onto the pulley 31 from an overhead shaft or the like. Supported by the framework at the front of the machine and at an angle of approximately

forty-five degrees is the elevator, comprising the elevator-casing 37 and the endless carrier 38. The carrier travels over pulleys 39 40 at the upper and lower ends of the elevator-casing, respectively, the shaft 41 of the roller or drum 39 being journaled in the upper end of the elevator-casing and in a standard 42, carried by the framework. On this shaft 41 is mounted a sprocket-wheel 43, which receives the drive-chain 44, passing thereover and over a sprocket-wheel 45, carried by the drive-shaft 30, whereby motion is communicated to the carrier or elevator simultaneously with the driving of the rolls. The shaft 46 of the roller or drum 40 extends through slots 47, provided therefor in the side walls of the elevator-casing, and is journaled in bearings 48, to which adjusting means 49 is connected, whereby the carrier may be tightened or slackened, as may be desired or required. The front of the elevator-casing is open, and mounted on this casing is a suitable hopper 50, into which the cucumbers or other articles to be sorted are fed or dumped. In order to prevent the crowding or overloading of the carrier, I provide regulating means, which I have generally termed a "knocker," which consists of a member 51, hinged to a cross-piece 52 in the hopper 50 and having its free end in engagement with the carrier, thus preventing the articles from piling up to too great an extent in front of each bucket or cross-piece on the endless belt or carrier. The pickles or other articles are discharged into a spout 53, which is the termination of the elevator-casing, and in practice I have generally discharged from this spout into a hopper 54, placed directly above the upper pair of rolls at the upper end thereof. I employ this hopper so that, if desired, the cucumbers or other articles may be fed from above directly thereto without the employment of the elevator; but in all cases where the cucumbers are stored on the same floor of the building as the machine is located upon it will be found preferable and desirable to employ the elevator for conducting the same to the rolls, as such means avoids lifting of the cucumbers up to the top of the rolls, as would be required if they were deposited direct in the hopper 54 without the employment of the elevator.

In the sorting of cucumbers it is customary to take the cucumbers as they are received at the pickling establishment and sort the same into ten commercial sizes. As this work is at present done by hand, it will be observed that it is necessary for the sorter to have ten different receptacles into which the ten different sizes are placed. The work cannot be done accurately, as many of the sizes are displaced through error. By the use of my improved machine for sorting the cucumbers it will be observed that this work of sorting is materially facilitated and made more accurate, as the machine sorting the cucumbers into five different sizes it is only necessary that each one of the different sizes separated by the machine be sorted by hand into two sizes. This is of course where four pairs of rolls are employed, as in the present illustration, though it will be evident that the numbers of pairs of rolls may be increased, so as to sort more different sizes. In practice, however, I have found a machine constructed in accordance with the present illustration answers the requirements and demands.

In practice I have found that the cucumbers too large to pass between a certain pair of rolls assume a practically vertical position while traveling or being carried down to the lower end of the rolls to be discharged, and in order to insure the discharge of the cucumbers at the lower ends of the rolls I provide a tilter, which consists of a plate or strip 55, supported on the supporting-bars 8 at the lower ends of the rolls and extending into the base between the rolls for a short distance and lying at an incline reverse to the inclination of the rolls. Thus as the cucumbers are carried down and they strike the upper end of this tilter the cucumbers are thrown into a practically horizontal position and are discharged into the delivery-spouts.

It is believed that the operation and construction of the device will be clearly apparent from the foregoing description, taken in connection with the accompanying drawings, and it will be noted that various changes may be made in the details of construction without departing from the general spirit of my invention.

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

1. A sorting-machine, comprising a plurality of pairs of rolls arranged in vertical alinement and in planes having a common inclination, the rolls of the respective pairs being spaced apart with the spaces decreasing in width from the upper pair of rolls, a hopper arranged adjacent one end of the upper pair of rolls, and a separate delivering means for the respective pairs of rolls arranged at the opposite ends thereof.

2. In a machine of the type set forth, a means for assorting vegetables and the like comprising a plurality of pairs of rolls arranged in vertical alinement and in planes having a common inclination, the rolls of the respective pairs being spaced apart to form passes with the passes decreasing in width from the upper pair, said rolls being inclined common planes, and means for rotating the rolls of the respective pair in opposite directions.

3. In a sorting-machine, the combination with a plurality of pairs of rolls, of means for imparting movement thereto, separate spouts arranged adjacent the ends of each pair of

rolls, and tilter-plates having one of their ends projecting into said spouts and their other ends extending into the spaces between said rolls, substantially as described.

4. In a machine of the type set forth, a plurality of pairs of rolls arranged in vertical alinement, a frame for supporting the same, sprocket-wheels arranged on the ends of said rolls, a sprocket-wheel journaled beneath said first-named wheels, a sprocket-wheel arranged above said first-named wheels, an endless chain passing over said last-named wheels and engaging the wheels of the respective pairs of rolls on common sides, and means for imparting movement to said chain.

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

JOHN RIDDLEBAUGH.

Witnesses:
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