

No. 740,758.

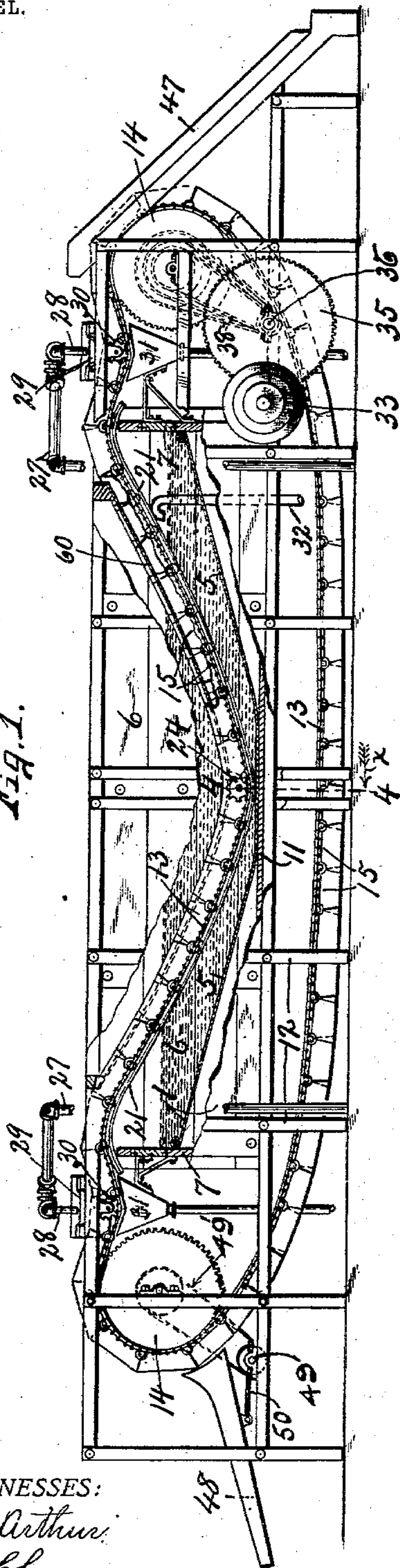
PATENTED OCT. 6, 1903.

H. D. HUTCHESON.
APPARATUS FOR BLANCHING PEAS.

APPLICATION FILED SEPT. 21, 1901.

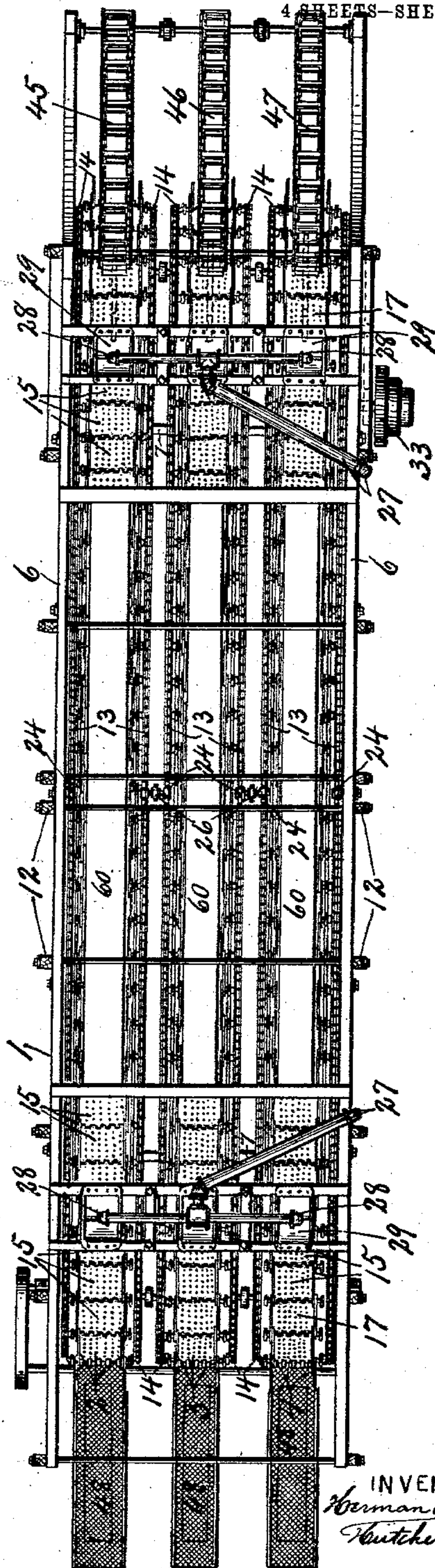
NO MODEL.

Fig. 1.



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Fig. 2.



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4 SHEETS—SHEET 2.

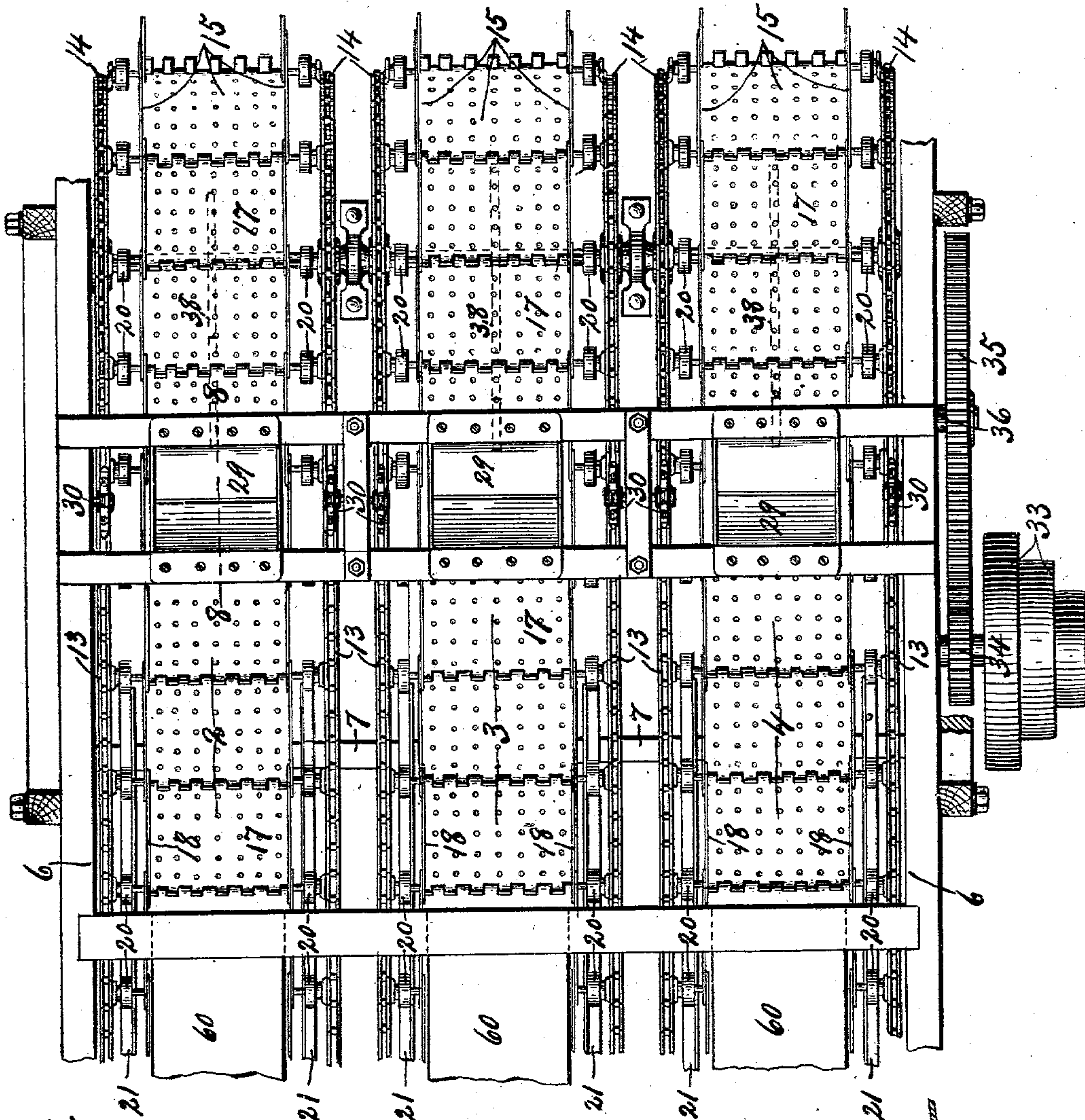


Fig. 3.

Fig. 8.

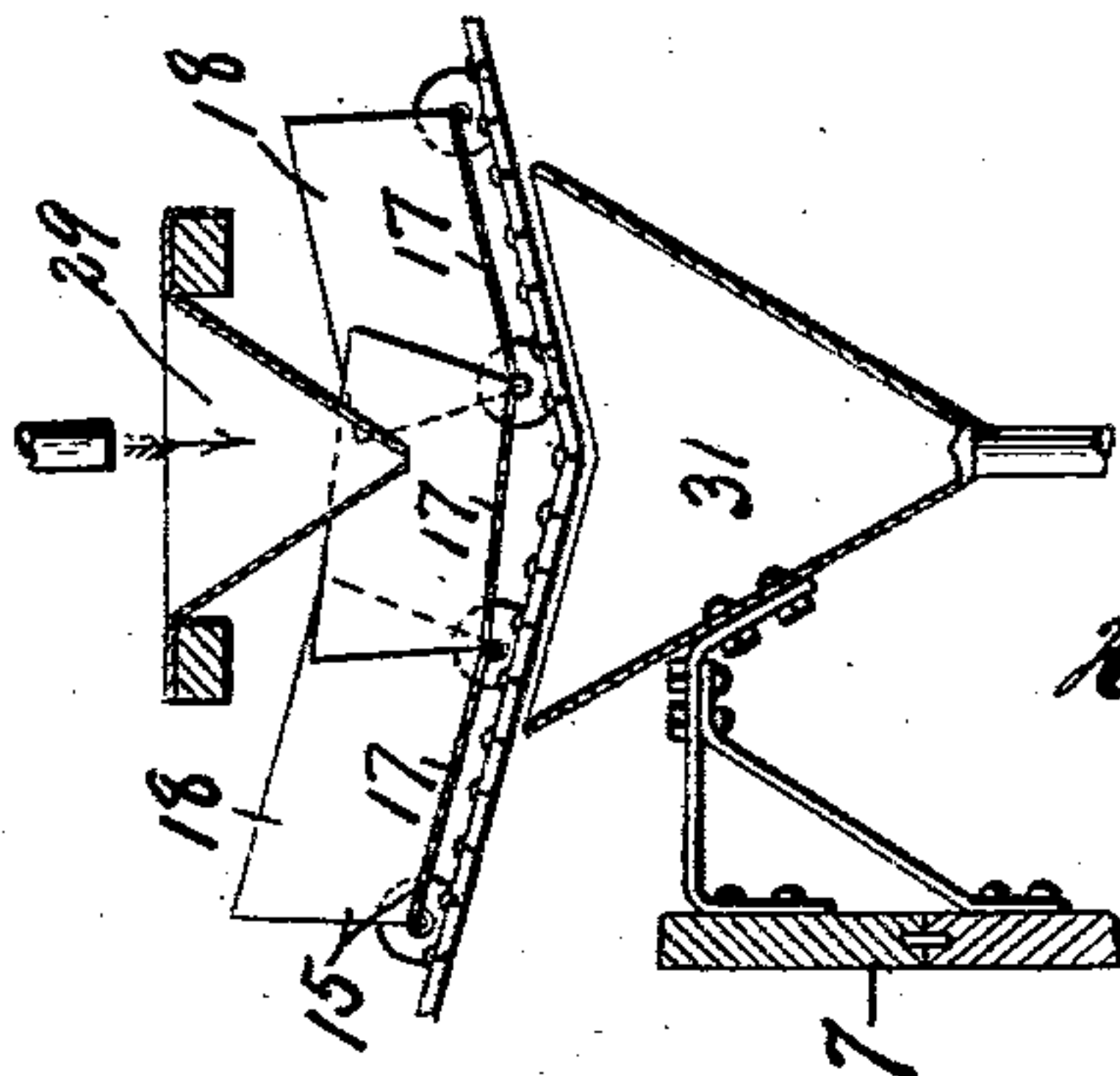
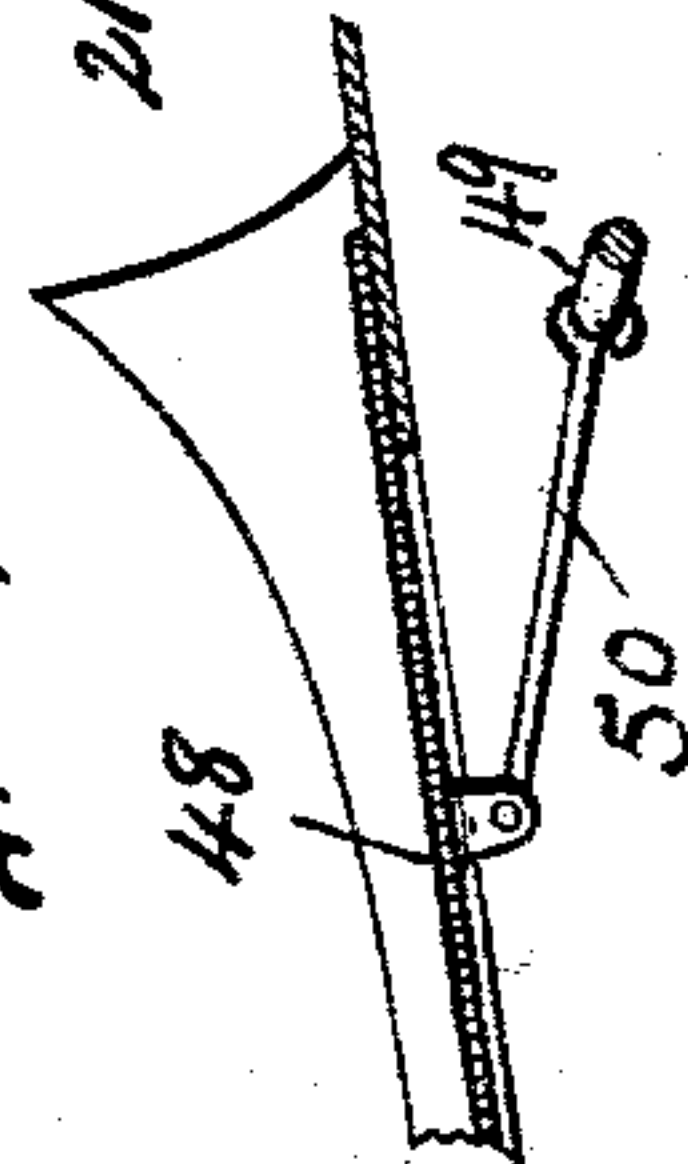


Fig. 10.



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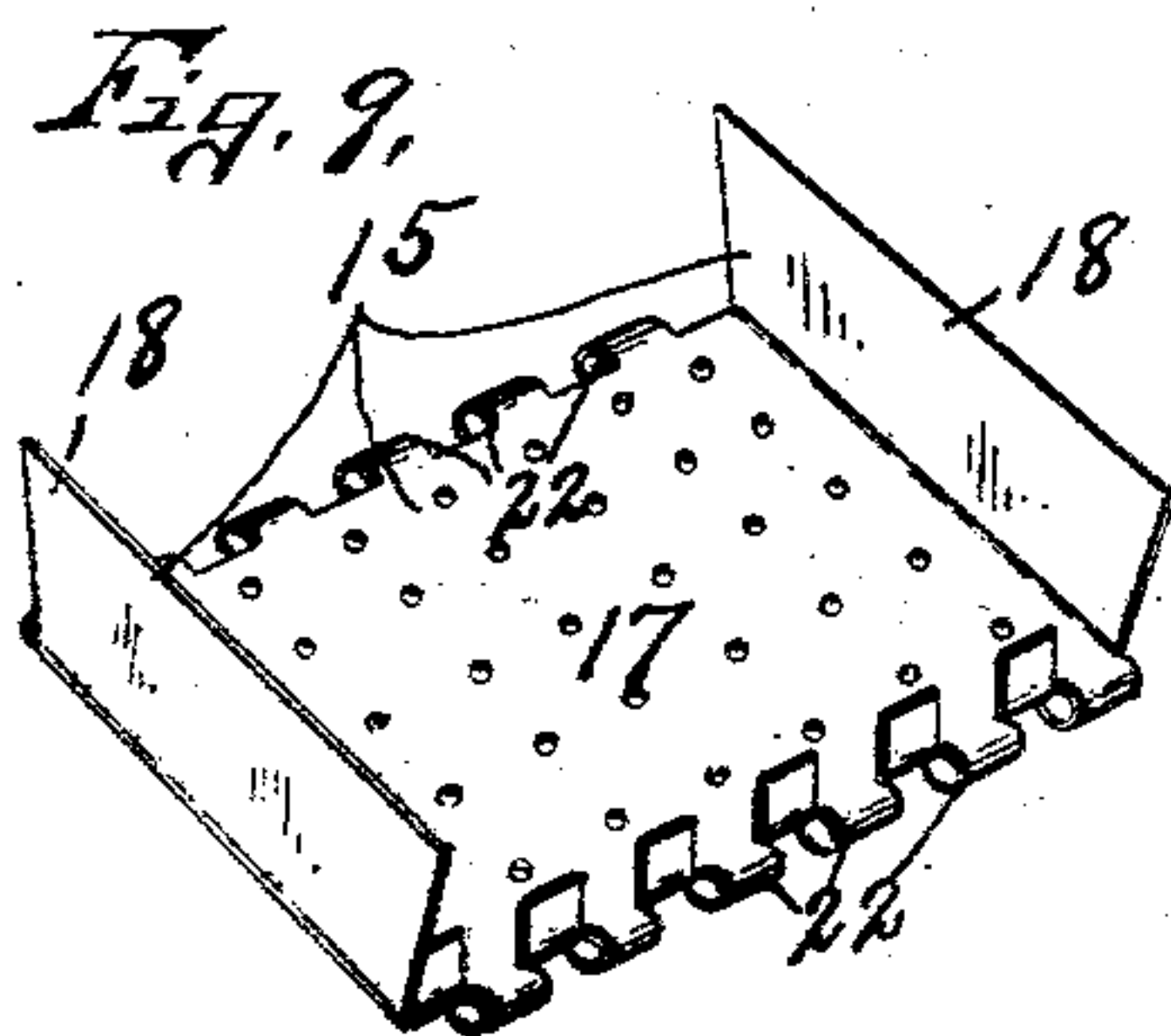
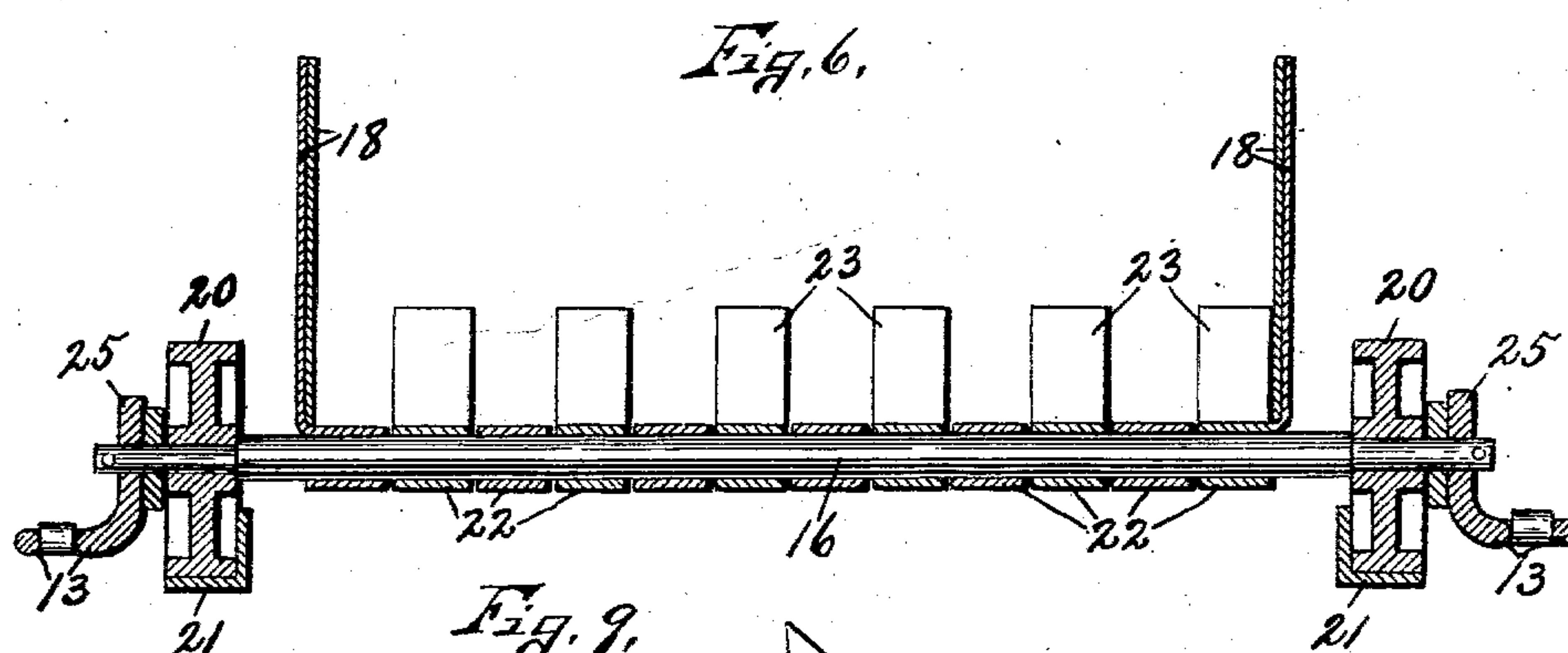
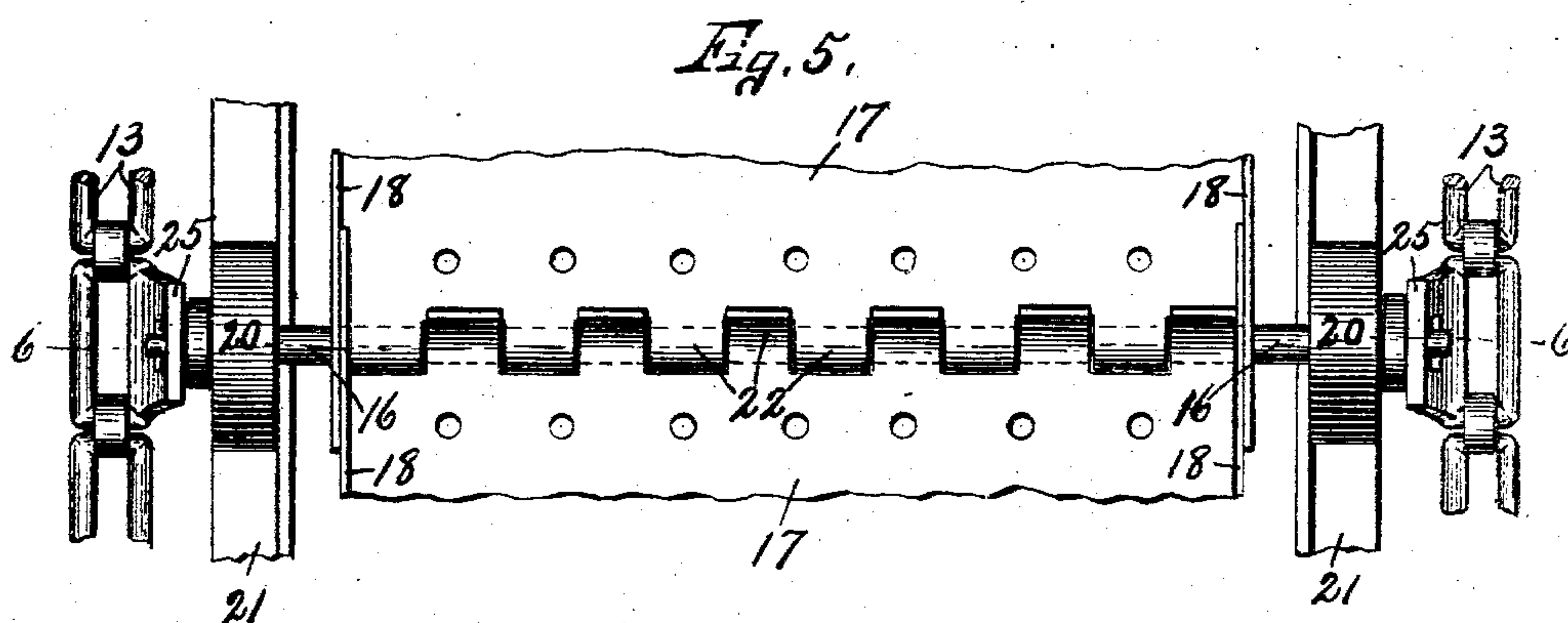
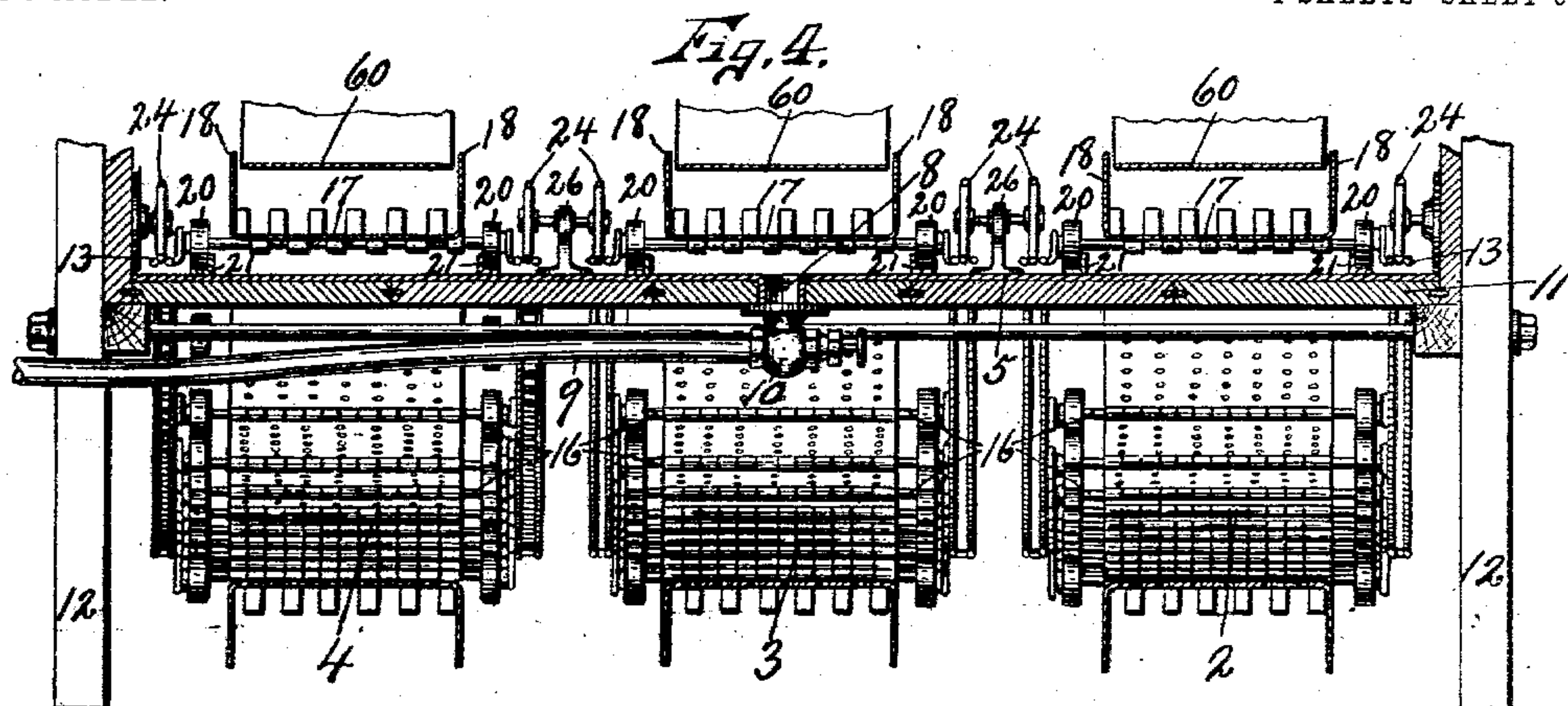
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4 SHEETS—SHEET 3.



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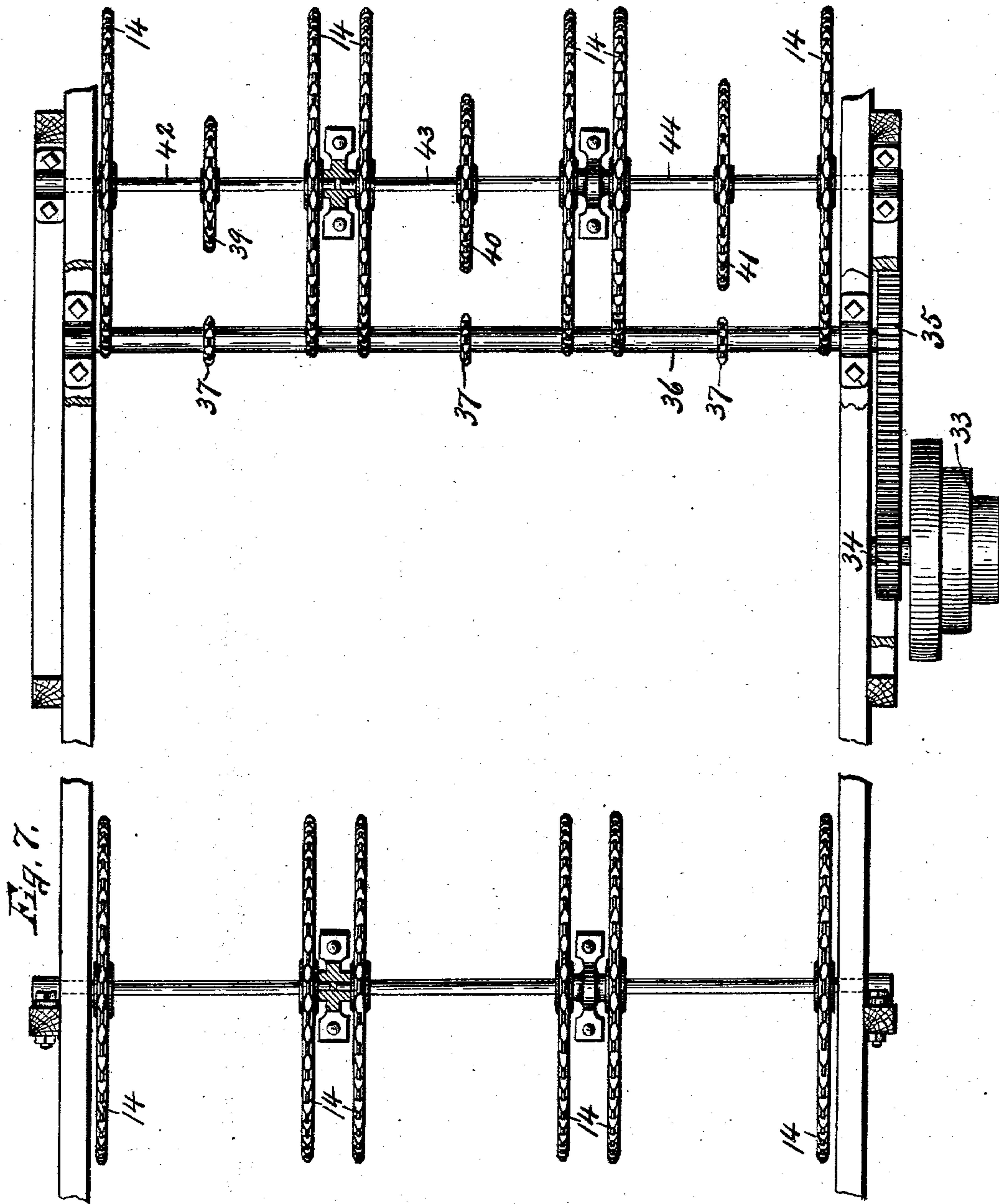
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NO MODEL.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

HERMAN D. HUTCHESON, OF NEWARK, NEW YORK.

APPARATUS FOR BLANCHING PEAS.

SPECIFICATION forming part of Letters Patent No. 740,758, dated October 6, 1903.

Application filed September 21, 1901. Serial No. 76,006. (No model.)

To all whom it may concern:

Be it known that I, HERMAN D. HUTCHESON, of Newark, in the county of Wayne, in the State of New York, have invented new and useful Improvements in Apparatus for Blanching Peas, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in machines for blanching peas and other similar vegetables.

The object of this invention is to provide means for automatically and continuously blanching or parboiling peas and similar vegetables, whereby the peas are distributed evenly over a suitable carrier and then conveyed through a steam-containing vat for uniformly blanching or parboiling the same.

Another object is to so construct and arrange the parts of the machine as to convey different grades of the peas through the blanching fluid at different rates of speed, whereby the peas of each grade are subjected to the blanching process for different periods of time, according to the grade of the peas.

A further object is to provide means for washing the peas on the carriers during their movement, either before or after subjecting the peas to the blanching process, or both before and after the peas are blanched.

Another object of this invention is to provide an elevator for each carrier for conveying each particular grade of peas to its respective carrier.

A still further object is to arrange a suitable screen-agitator at the discharge end of the carrier for receiving the peas and discharging the same into any desired form of receptacle provided for the peas.

To this end the invention consists in the combination, construction, and arrangements of the parts of a pea-blanching machine, as hereinafter fully described, and pointed out in the claims.

Referring to the drawings, Figures 1 and 2 are respectively a side elevation and top plan of my improved machine for blanching peas, portions of the vat being broken away in Fig. 1 for disclosing the inclined bottom wall of the vat and a portion of the carrier traveling through the blanching fluid. Fig. 3 is an enlarged top plan of the right-hand end of the

device seen in Figs. 1 and 2, the elevators and water-feeding pipes being omitted, and showing particularly the feeding mechanism for the carriers. Fig. 4 is an enlarged sectional view taken on line 4 4 of Fig. 1 looking in the direction indicated by the arrow *x*, the upwardly-inclining portion of the carrier being broken away and the rear supporting-idlers for the carrier being omitted. Fig. 5 is an enlarged top plan of the ends of the adjacent sections of one of the carriers, showing particularly the means for securing said sections together and also showing the supporting-rollers, portions of the carrier-chains, and the track or ways upon which said rollers ride. Fig. 6 is a sectional view taken on line 6 6 of Fig. 5. Fig. 7 is a top plan of the detached carrier-driving mechanism, showing the relative sizes of the driving-wheels for effecting the differential speeds of the various carriers. Fig. 8 is a sectional view taken on line 8 8 of Fig. 3. Fig. 9 is a perspective view of one of the detached sections of one of the carriers. Fig. 10 is a lengthwise sectional view through the screen-agitator, showing the means for moving the screen endwise.

Similar reference characters indicate corresponding parts in all the views.

As seen in the drawings, this invention consists, essentially, of a vat or receptacle 1, containing steam or other pea-blanching fluid, carriers 2, 3, and 4 for conveying the peas or similar vegetables through the blanching fluid, suitable driving mechanism for actuating the carriers at different rates of speed, and means for washing the peas on the carriers during their movement to and from the vat. The vat 1 may be of any desired form, size, or construction, provided with a bottom wall 5 and side and end walls 6 and 7, the bottom wall 5 being extended between the side and end walls and having its intermediate portion depressed beneath its opposite ends and provided with a discharge-opening 8, communicating with a discharge-conduit 9. The bottom wall 5 inclines downwardly from its opposite ends toward the outlet-opening 8 for the purpose of depositing the sediment or refuse at said opening, through which the sediment or refuse may be drawn off to any desired locality through the conduit 9, this discharge of the precipitate being controlled by

a suitable valve 10, connecting the opening 8 with the conduit 9. This vat 1 is provided with a supplemental bottom wall 11, forming a portion of the framework of the vat, which is usually mounted upon legs or standards 12 and is preferably formed of wood, while the bottom wall 5 is preferably formed of metal, which facilitates the gravitation of the sediment toward the opening 8 and is better adapted to resist the action of the steam or other blanching fluid which may be employed in the process of blanching peas or other vegetables. The carriers 2, 3, and 4 are similar in construction, being arranged side by side and adapted to travel in the same direction. These carriers preferably consist of endless belts, each of which are mounted upon suitable endless chains 13, supported at the opposite ends of the vat upon idlers or sprocket-wheels 14. Each of the carriers 2, 3, and 4 is made up of a series of sheet-metal sections 15, linked together at their adjacent ends by suitable rods 16, each section having a perforated supporting-wall 17 and outwardly-projecting side walls 18, the perforated bottom walls 17 being adapted to receive and support the peas or other vegetables, and the perforations facilitate the drainage of the water or blanching fluid from the peas during both the process of washing and blanching the same. The side walls 18 serve to hold the peas or other vegetables from lateral displacement from the perforated walls 17 during the movement of the carriage from one end of the machine to the other, the front and rear edges of side walls of each of the sections being inclined outwardly from each other, and the adjacent ends of the sides of the sections overlap each other. It is thus evident that as the carrier travels over the sprocket-wheels and downwardly through the blanching fluid the adjacent ends of the side walls of the sections slide one upon the other, thus forming a flexible belt, and the end edges of the said side walls are inclined sufficiently to prevent the edges from separating or opening during the movement of the carrier through the blanching fluid and over its supporting sprocket-wheels.

In order to facilitate the movement of each of the carriers and to reduce the friction incidental to their movements, I provide each of the opposite ends of each of the pivotal rods 16 with suitable rollers 20, which are arranged to ride upon oppositely-arranged tracks 21, interposed between the end carrier-supporting idlers 14. The adjacent ends of each of the sections of each of the carriers are provided with loops or eyes 22, which receive the rod 16 and permit the sections to move relatively to each other upon said rod during the travel of the carrier. The rear ends of each of these sections are also provided with outwardly-projecting arms 23, which are usually formed integral with the perforated bottom wall 17 and alternate with the eyes or loops 22 of their respective sec-

tions. In the formation of each of these sections their rear ends are provided with a series of lengthwise slits extending inwardly from their rear edges for forming a series of tongues, alternate tongues being bent to form the loops 22 and the remaining tongues being bent outwardly to form the arms 23. The front ends of each of the sections 14 are similarly slit inwardly from their front edges for forming a series of tongues, each alternate tongue being bent to form loops 22, aligned with the arms 23, the remaining tongues at the forward ends of the sections being removed or cut away to receive the loops of the next adjacent section. These loops and tongues of the various sections of each carrier are so formed that when the sections are assembled the arms of one section are aligned with the spaces between the arms of the next adjacent section, this arrangement serving to facilitate or insure the continuous conveying of the peas from the time they are deposited upon the front end of the carrier until they are discharged at the rear end of the apparatus.

As previously stated, the opposite ends of the endless carriers are mounted upon the sprockets 14, which are journaled on the frame of the apparatus at the opposite ends of the vat 1, the intermediate upper portion of the chain being depressed into the vat and is held in this position partially by its own gravity, but mainly by a suitable idler, as sprockets 24, there being one of these idlers for each of the chains 13. I preferably employ two chains for each of the carriers, one at each side, which are passed over the idlers 14, and being connected to the sections of the carrier, as previously described, serve as a convenient flexible support for tying the carrier-sections together, it being understood that the links of the chain 13 adjacent to the ends of the several sections of the carrier are provided with apertured ears 25, which receive the opposite ends of the rods 16, the rollers 20 being journaled on said rod between the ears 25 and the adjacent side walls of the carrier-sections. I preferably provide a pair of tracks or guides 21 for each of the carriers, these tracks being supported at their opposite ends in proximity to the opposite ends of the vat and preferably incline downwardly toward the center of the vat for supporting the upper portion of the carrier and cooperate with the rollers 20 to reduce the friction of the carrier during its movement through the blanching fluid of the vat.

The sprocket-idlers 24 may be supported in any desired manner, the outer idlers being secured to the side walls of the vat and the intermediate idlers being revolubly mounted upon suitable standards, as 26, projecting upwardly from the bottom wall of the said vat at substantially its lowest point.

In order that the peas may be thoroughly washed both before and after leaving the blanching-vat, I preferably provide suitable

water-supply conduits 27, having branch conduits 28 discharging into hoppers 29, arranged at the opposite ends of the vat immediately above the adjacent portions of the carriers, said adjacent portions of the carriers being slightly depressed or dished beneath the hoppers 29 for facilitating the thorough washing of the peas or other vegetables on the carrier during its movement. The means for depressing the opposite ends of the upper portion of the carriers preferably consists of sprocket-idlers 30, journaled on the supporting-frame of the apparatus and engaged with the chains 13 in such manner as to hold said opposite ends of the chain and the carrier connected thereto in the depressed position just described without interrupting the movement of the carrier. Mounted upon the frame or in any other desired manner are additional hoppers or conductors 31, which are arranged beneath the depressed portions at the opposite ends of the carrier to receive the water and refuse passing through the perforated bottom walls of the carrier and conveying the same to any desired locality away from the machine.

I preferably employ steam in the vat 1 as a blanching fluid, which steam may be introduced into any desired portion of the vat through the conduit 32, said conduit being connected to a steam-generating apparatus, not necessary to herein illustrate or describe, it being understood that this steam is introduced into the vat for the purpose of blanching or parboiling the peas or other vegetables which may be conveyed through the vat upon the carriers 2, 3, and 4. The vat 1 is also adapted to support a body of water, into which the depressed intermediate portion of the upper part of the carrier is immersed during its travel from one end of the machine to the other, this water being heated to the boiling-point by steam and affords an efficient means for blanching the peas or other vegetables conveyed therethrough upon the carriers.

Any desired number of carriers may be employed or used in connection with the vat 1, and I have here shown three of the carriers, the construction of which has been previously described, each of which is moved at a different rate of speed than the other, the carrier 2 being movable at a greater speed than the carrier 3 and the carrier 3 being movable at a greater speed than the carrier 4, although it is evident that this arrangement may be varied without departing from the spirit of this invention.

As seen in the drawings, particularly in Fig. 7, the driving mechanism for effecting this differential-speed movement of the carriers consists of a driving-pulley 33, having its shaft or spindle provided with a pinion 34, which meshes with a gear 35 upon a shaft 36, arranged transversely of the movement of the carriers. This shaft 36 is provided with a series of sprocket-wheels 37, one for each

carrier, which are connected by sprocket-chains 38 to sprocket-wheels 39, 40, and 41 of different diameters, these latter sprocket-wheels 39, 40, and 41 being mounted upon independent shafts or spindles 42, 43, and 44, each of which spindles carries a pair of supporting sprocket-wheels 14 for driving its respective carrier.

As seen in the drawings, the pulley 33 is provided with a series of belt-faces of unequal diameter, which enables the machine to be run at different speeds and is connected to move the carriers at any desired speed, which is determined by the quality or grade of peas or other vegetables to be treated, the ratio of the movement of the several carriers relatively to each other being the same, and is also determined by the grade of peas or other vegetables to be treated, no matter what the speed of movement of the driving-pulley 33 may be. In order to effect this differential movement of the carriers for treating or blanching different grades of peas, the size of the sprocket-wheel 39 is less than the sprocket-wheel 40 and that of the sprocket-wheel 40 is less than the sprocket-wheel 41, and it is evident, therefore, that these sprockets being driven from the driving-wheels of the same diameter the carrier 2 will be moved at a greater rate of speed than the carrier 3 and the carrier 3 will be moved at a greater rate of speed than the carrier 4, the grade of peas being treated upon the carrier 2 being subjected to the blanching process a less period of time than the grade upon the carrier 3, and in like manner the grade of peas conveyed to the vat by the carrier 4 is subjected to the blanching treatment for a greater period of time than the grade upon the carrier 3.

It is evident from the foregoing description that this treatment of the peas is continuous and that different grades of peas are treated according to their requirements automatically and continuously. Any desired means may be employed for feeding the different grades of peas to their respective carriers; but I preferably employ suitable elevators 45, 46, and 47, these elevators being of the usual chain-and-bucket type and are each connected to the driving mechanism of its respective carrier in such manner as to feed the peas or other vegetables upon its respective carrier in proportion to the speed of the movement of said carriers, it being understood that these elevators are arranged to discharge upon the forward ends of their respective carriers in proximity to the hoppers 29.

At the rear end of the machine I provide a series of reciprocally-movable screens 48, one for each carrier, for receiving the separate grade of peas conveyed by each carrier, these screen-agitators being inclined downwardly from their forward ends and are adapted to discharge into any suitable receptacle. (Not illustrated, but which is adapted to be placed at the mouth of the screen.) Any desired means may be employed for reciprocating

this screen, such as an eccentric 49 and a connecting-rod 50, the eccentric 49 being actuated by a belt 49', driven from the shaft of one of the sprocket-wheels 14, although it is evident that any other means may be employed for effecting the longitudinal movement of the screen.

In order to concentrate the heat of the water and steam to the portions of the carriers immersed therein and to thereby expedite the process of blanching the peas or similar vegetables, I provide a suitable shield or confining-plate 60 for each of the carriers, these shields or confining-plates being fixed to the frame and are arranged immediately above the intermediate depressed portions of the carriers between their side walls, thus forming a substantially closed trough or conduit immersed in the water and steam through which the peas are conveyed by their respective carriers, it being understood that these plates follow the dip or inclination of the portions of their respective carriers, which are depressed into the fluid in the vat.

The operation of my invention is as follows: The different grades of peas or other vegetables are placed in their respective elevators and are conveyed thereby to the corresponding carriers 2, 3, and 4, which in turn convey the peas through the blanching fluid in the vat 1, discharging same at their rear ends onto the screens 48. Immediately after the peas have been discharged upon their respective carriers and before passing to the blanching fluid they are thoroughly washed upon the carriers with water discharged into the hoppers 29, which carries off the sediment through the perforated bottom walls of the carriers into the hopper 31, from which it may be conveyed to any desired locality. In like manner the peas are washed after passing through the blanching fluid by means of the water discharged from the rear hoppers 29, the rear hopper 31 serving to carry off the refuse.

The operation of my invention will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be noted that considerable change may be made in the means for moving the carriers at different rates of speed and that some change may be made in the detailed construction and arrangement of parts of the vat and the carriers without departing from the spirit of this invention. Therefore I do not limit myself to the precise combination, construction, and arrangement herein shown and described—as, for instance, the side walls of the several belt-sections may be perforated similar to the bottom wall, and the top wall or plate 60 may also be perforated.

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

1. An apparatus for blanching peas, com-

prising a vat adapted to contain a blanching fluid, a carrier for the peas moving continuously through the fluid, means to actuate the carrier, a conveyer arranged to discharge the peas on the carrier, and means in proximity to the discharge end of the conveyer for washing the peas immediately after they are deposited on the carrier.

2. An apparatus for blanching peas comprising a vat adapted to contain a blanching fluid, a continuously-moving perforated carrier having its central upper portions depressed into the vat for conveying the peas through the fluid, means to actuate the carrier, and conduits discharging a washing fluid onto the upper portion of the carrier at both ends of the depressed portion.

3. In a pea-blanching machine, a vat adapted to contain a blanching fluid, an endless perforated carrier having its central portion depressed into the vat for conveying the peas through the blanching fluid, means for producing depressions in the upper portion of the carrier near its opposite ends, conduits for discharging a washing liquid into the latter depressions, and means to actuate the carrier.

4. In a pea-blanching machine, a vat adapted to contain a blanching fluid, a carrier arranged to convey the peas through the fluid, means for washing the peas on the carrier during its movement, and additional means to depress the carrier at the washing-point for the purpose described.

5. An apparatus for blanching peas comprising a vat adapted to contain a blanching fluid, a plurality of carriers movable through the fluid at different rates of speed, and means for actuating the carriers.

6. An apparatus for blanching peas comprising a vat adapted to contain a blanching fluid, endless carriers arranged side by side and traveling in substantially the same planes for conveying the peas through the fluid, means to move the carriers at different rates of speed, and means for washing the peas on all the carriers simultaneously during their movement.

7. In a pea-blanching machine, the combination with a steam-containing vat, an endless carrier having the central and opposite end portions thereof depressed, the central portion dipping into the vat for the purpose described, means for discharging the washing fluid into the end depressions, a track or way for the central depressed portion of the carrier, and means to move the carrier continuously in one direction.

8. A machine for blanching peas comprising a vat adapted to contain a blanching fluid, a carrier for conveying the peas through the fluid, means to actuate the carrier, a shield or confining-plate above and in proximity to the carrier, and means to discharge steam into the vat beneath the carrier and confining-plate so that the steam or heated fluid

percolates through the carrier to the peas and is confined by said plate to quickly blanch the peas.

5 9. In a pea-blanching machine, the combination with a steam and water containing vat having a bottom provided with a discharge-opening, an endless carrier movable through the steam and water in the vat and having a perforated bottom wall and side
10 walls projecting therefrom, a shield or confining-plate above the perforated wall between the side walls of the carrier to form an open-ended conduit, means at opposite ends of the plate or shield for washing the peas on the
15 carrier during its movement before and after entering the conduit, and means for conveying the peas to the carrier.

10. An apparatus for blanching peas comprising a vat adapted to contain a blanching fluid, endless carriers arranged side by side 20 movable at different rates of speed for conveying different grades of peas through the blanching fluid, means connected to actuate said carriers, and additional conveyers movable at different rates of speed for feeding 25 the different grades of peas to their respective carriers in proportion to their respective carrying capacities.

In witness whereof I have hereunto set my hand this 16th day of September, 1901.

HERMAN D. HUTCHESON.

Witnesses:

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NELLIE B. HUTCHESON.