

No. 657,692.

Patented Sept. 11, 1900.

H. EASTWOOD.
RAISIN CLEANER AND CAP STEMMER.

(Application filed Dec. 21, 1899.)

(No Model.)

2 Sheets—Sheet 1.

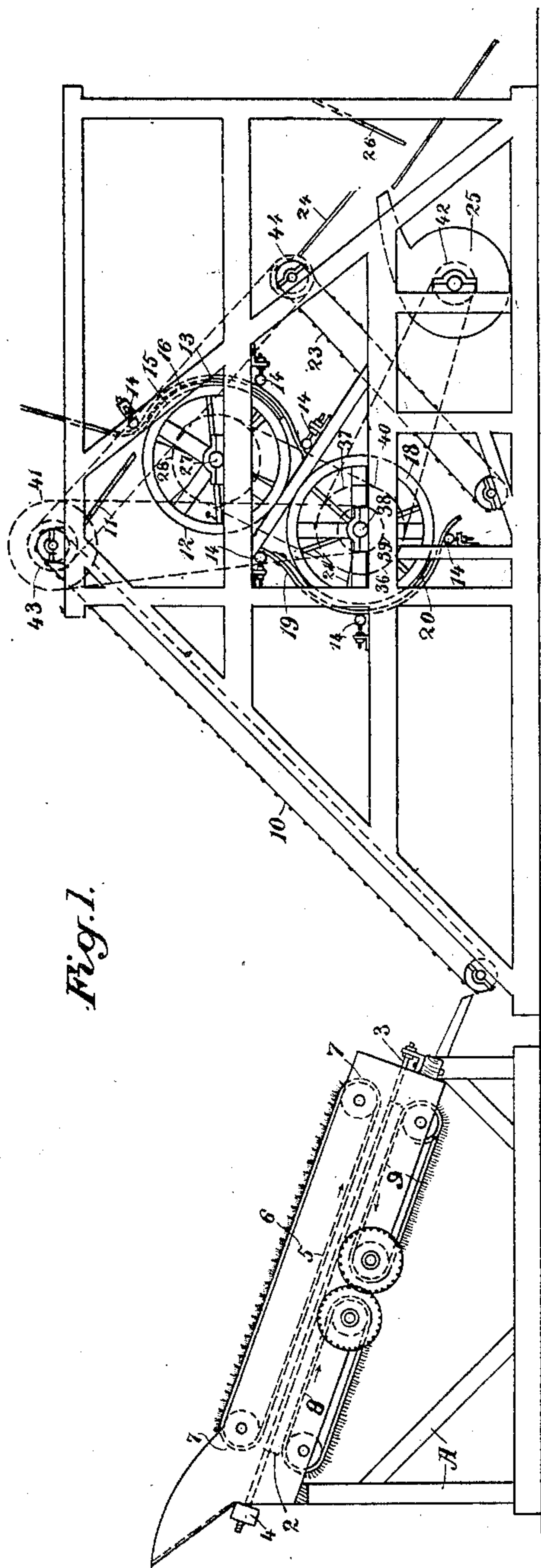


Fig. 1.

Fig. 3.

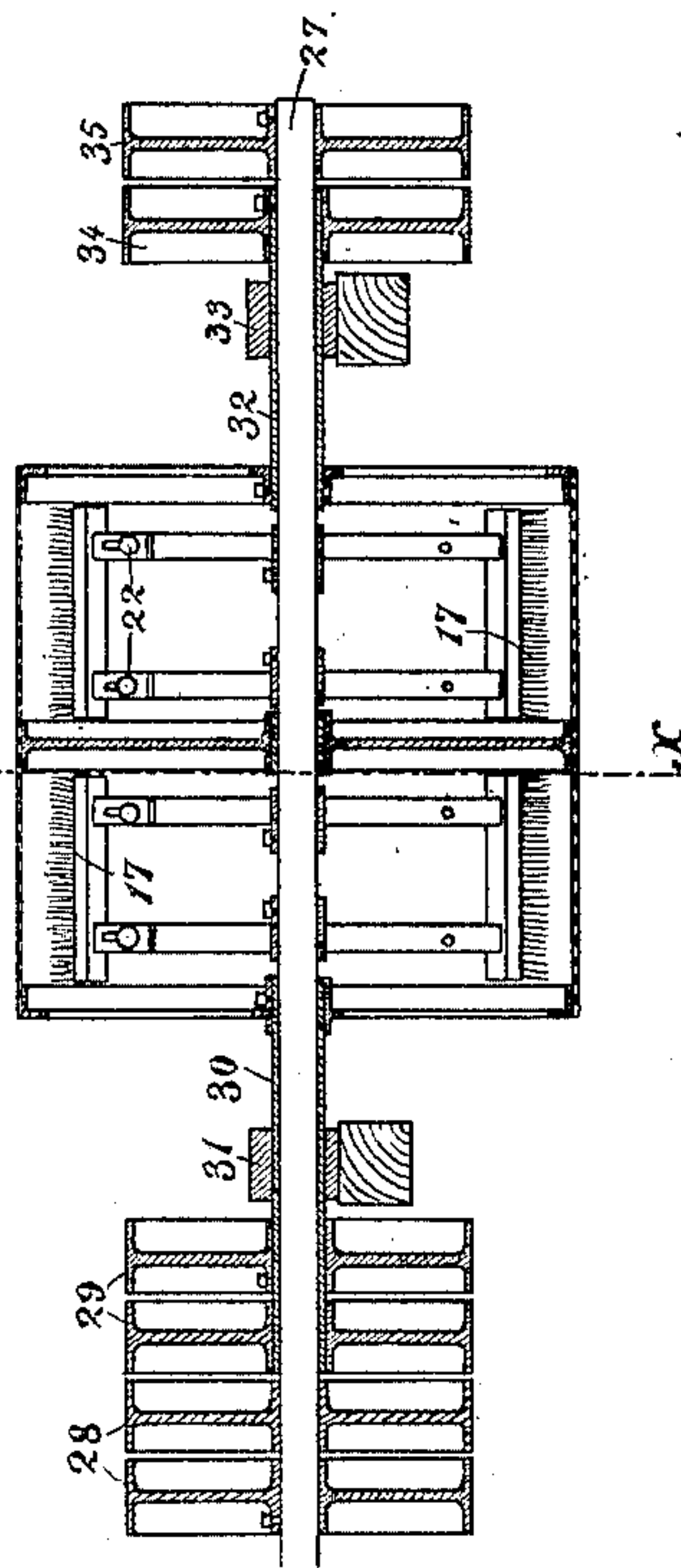
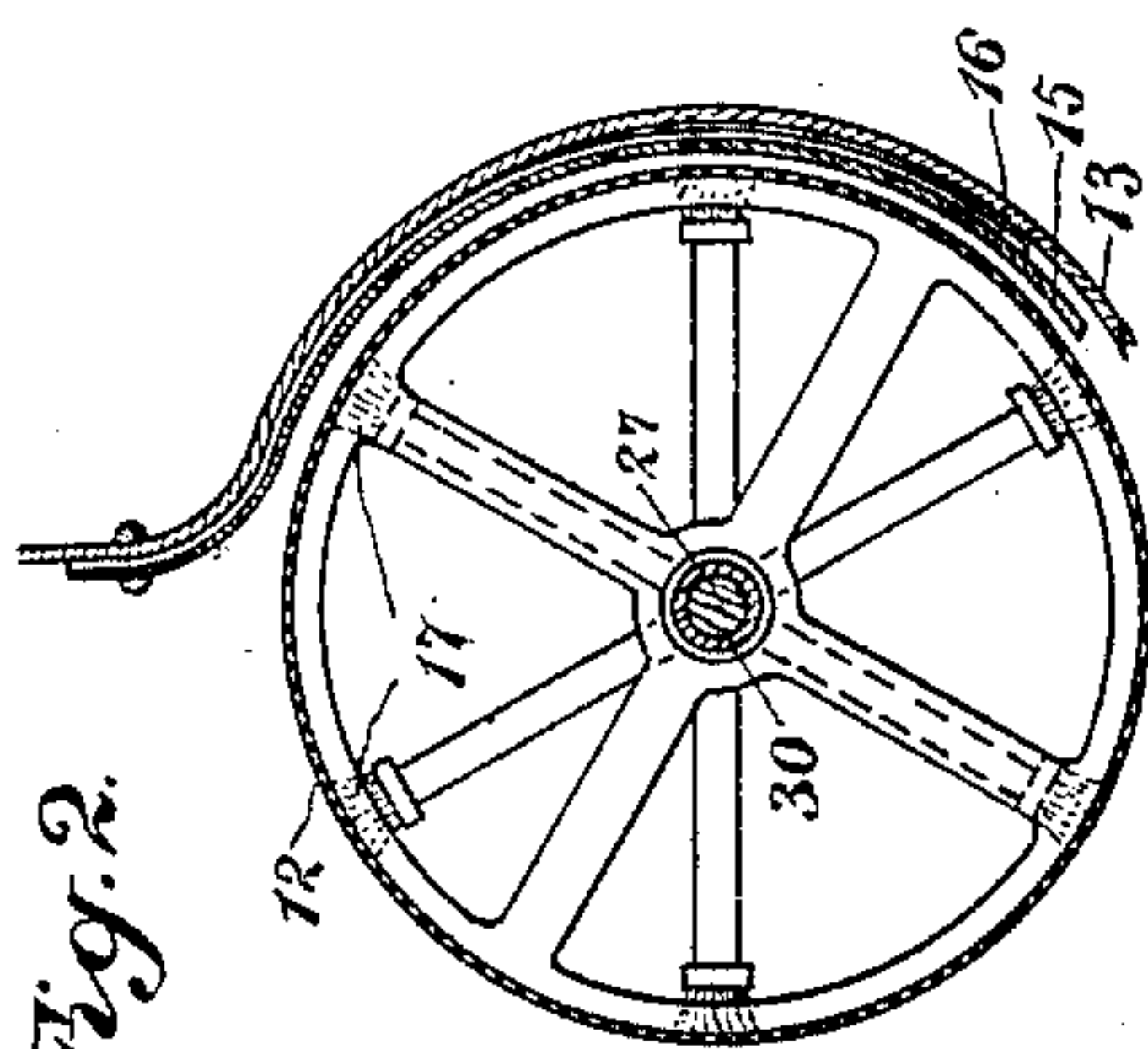


Fig. 2.



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2 Sheets—Sheet 2.

Fig. 4.

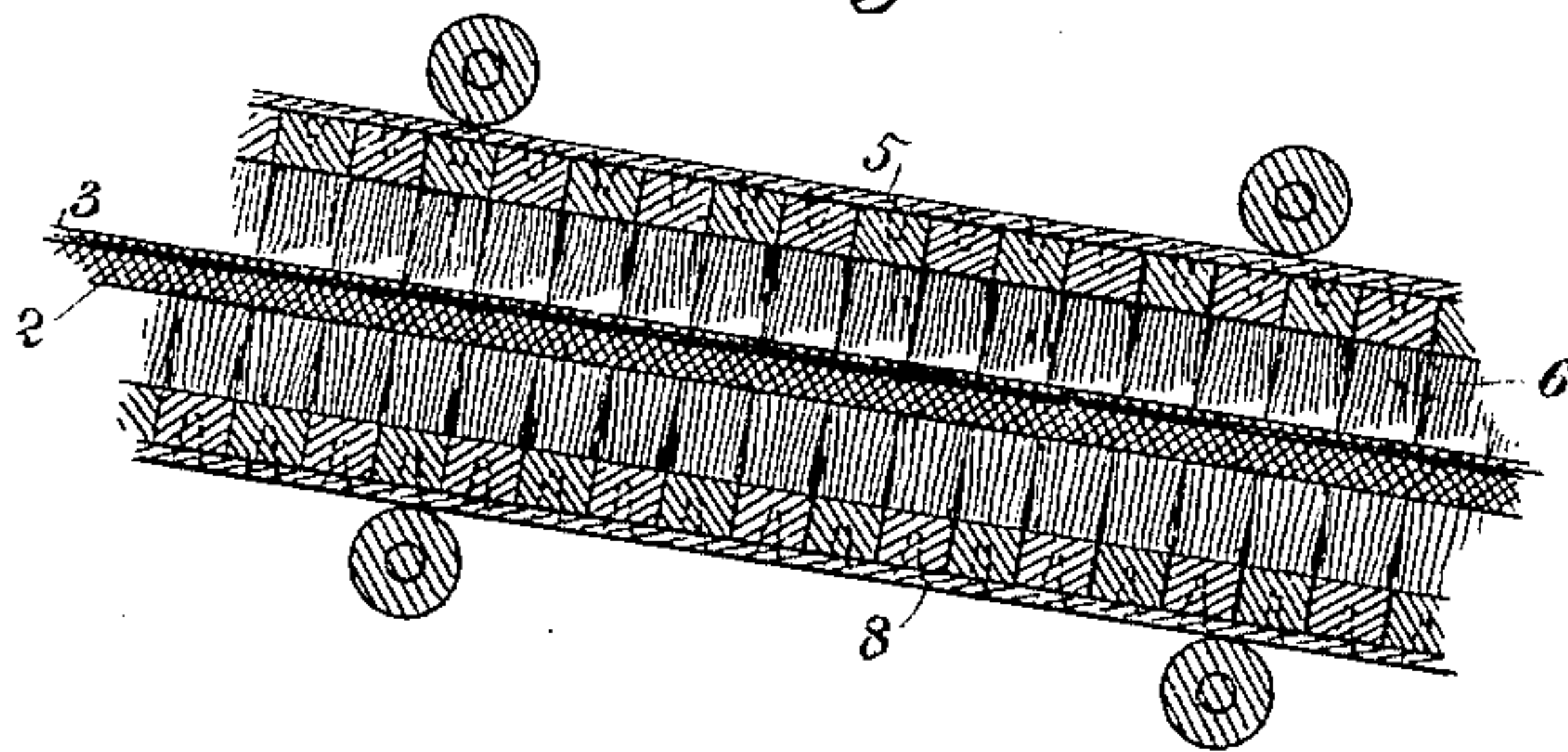


Fig. 5.

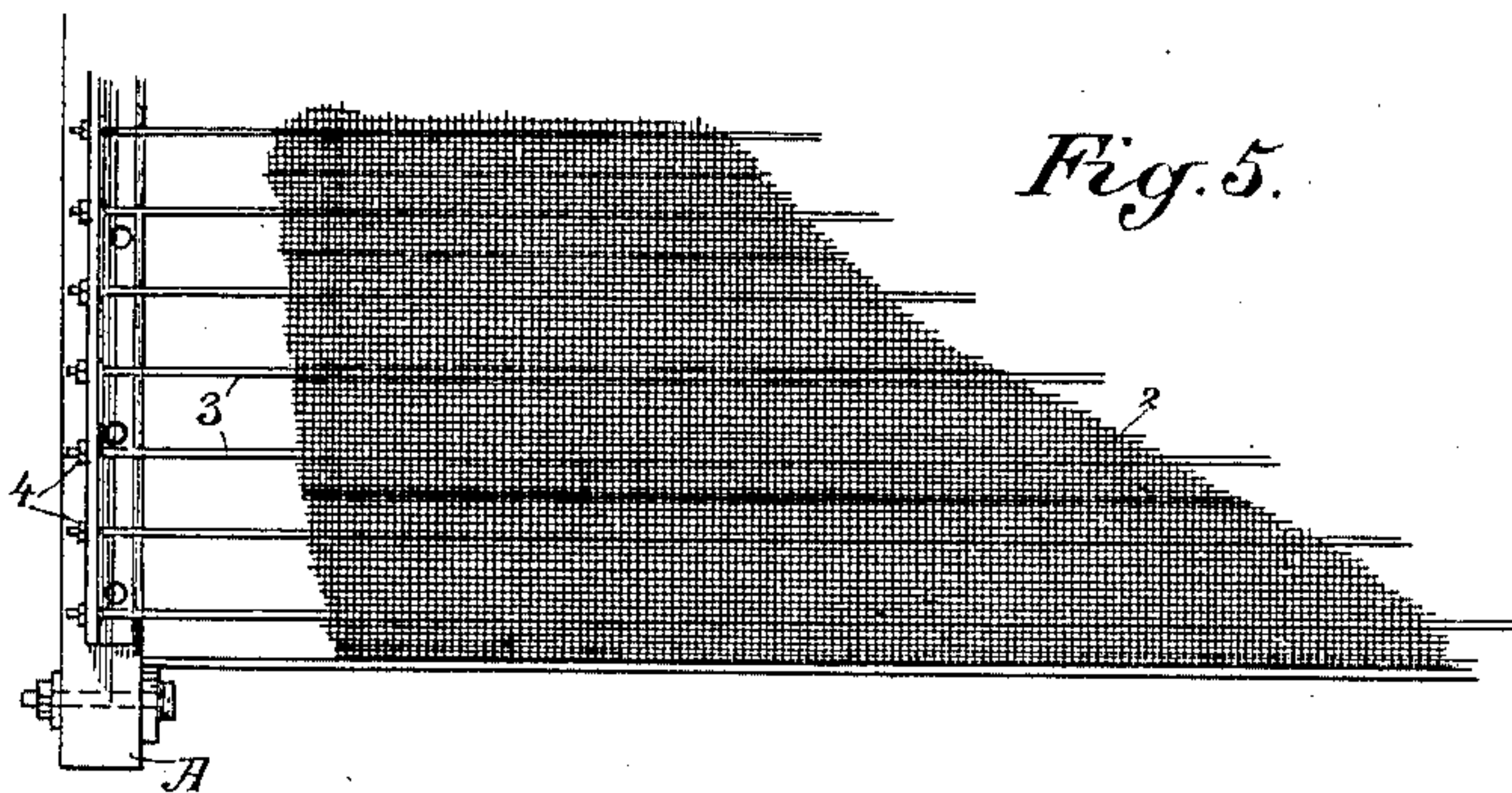
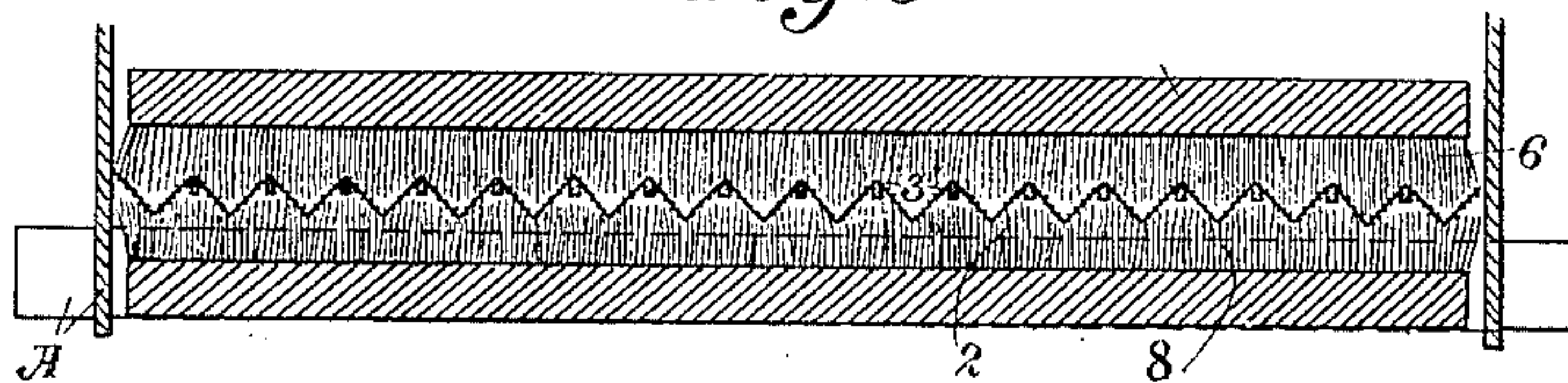


Fig. 6.



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UNITED STATES PATENT OFFICE.

HARRY EASTWOOD, OF FRESNO, CALIFORNIA.

RAISIN-CLEANER AND CAP-STEMMER.

SPECIFICATION forming part of Letters Patent No. 657,692, dated September 11, 1900.

Application filed December 21, 1899. Serial No. 741,093. (No model.)

To all whom it may concern:

Be it known that I, HARRY EASTWOOD, a citizen of the United States, residing at Fresno, county of Fresno, State of California, have invented an Improvement in Raisin-Cleaners and Cap-Stemmers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus which is designed for cleaning raisins and for performing work known as "cap-stemming."

It consists of mechanism which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the cleaner and stemmer. Fig. 2 is a section through one of the rotary drums on line $x x$ of Fig. 3. Fig. 3 is a longitudinal section of the same. Fig. 4 is a longitudinal section through the belt-brushes. Fig. 5 is a plan view of the screen and connections. Fig. 6 is a lateral section through Fig. 4.

In preparing certain classes of raisins for the market they are removed from the stems; but in most cases there remains a short piece, known as the "cap-stem," which adheres to the raisin. There is also more or less dirt and dust which it is desirable to clean off, and my apparatus is designed to perform this part of the work. As shown in the present case, the operation is performed in two stages, the raisins being first delivered into the preliminary cleaning apparatus and thence to that part of the apparatus which finishes the work; but I desire it to be understood that either part of the apparatus may be used independently of the other or in conjunction with some other form of apparatus without materially altering the character of the invention or the work done thereby.

As shown in the present construction, A is an inclined frame of any suitable description, having fixed upon it an inclined screen 2, which, as here shown, is corrugated to form longitudinal channels extending from top to bottom. This screen may be made of woven wire, perforated sheet metal, or any other foraminous form, and the raisins or fruit to be cleaned are delivered to the upper end of the inclined screen and caused to travel through the channels to the lower end. In order to properly support the screen, I have

shown light steel rods 3 extending lengthwise beneath the convex arch of each of the corrugations, and these rods are provided with nuts or equivalent tension devices 4, so that they may be drawn as tight as desired, and thus serve to support the screens.

Passing over the screen is an endless belt 5, which is formed with transverse slats or sections, having fixed upon the surface projecting brushes 6. These brushes may be made of any suitable or desired material, preferably of bristles, and they may be beveled at the outer ends, so that the brushes will act more thoroughly upon the surface of the raisins. This brush-belt passes around supporting and driving pulleys 7, so geared that the lower surface of the belt, with its brushes, travels downwardly along the corrugated screen-surface over which the raisins are passing, and the brushes act upon the raisins, which are rolled and transferred from the upper to the lower end of the screen. Beneath the screen is a second endless belt 8, passing around rollers with connections, so that it is driven with its upper brush-carrying surface in contact with the lower sides of the corrugated screen. The brushes carried upon the belt 8 may be of suitable material, preferably of wire, as they act through the meshes of the screen upon the passing fruit. 9 is another belt of similar character to 8, also passing around rollers, and this belt, also carrying brushes, is driven in the opposite direction from the belt 8—that is, it travels upwardly against the incline of the corrugated screen—and the fruit passing over the lower half of the screen is thus acted upon from below in the opposite direction from the action of the brushes above it. This reverse movement of the screens 8 and 9 may be well effected by means of intermeshing driving-gears at points where the belts approach each other, so that the gears being turned to drive one belt in one direction will drive the other one in the opposite direction; but this may also be effected by various other mechanical devices well known. The dust and dirt which may have collected or been deposited upon the raisins or fruit will be cleaned off by the action of the brushes, and a portion of the stems may also be removed by the same action, and the dust

and dirt falling through the screen will be separated, so that the raisins delivered from the lower end of the screen will be received upon an elevator or carrier and delivered to the second part of the machine, which is designed more particularly to remove the cap-stems.

If the building is so constructed or the apparatus so located that the raisins can pass from the lower end of the first part of the machine to the upper part of the second portion of the machine by gravitation, it will not be necessary to use an elevator; but if the apparatus is all upon one floor or level the elevator 10 is interposed to receive the raisins from the first screen 2 and deliver them upon a feed-apron or other equivalent directing device 11, so that from this point they pass directly over the screen or perforated drum 12. The surface of this drum is made of screen, and, as before stated, this screen may be of any suitable or desired construction, either perforated metal with diamond or other shaped holes formed through it, wire screen, or other foraminous construction. Partially surrounding this drum 12 is a fender 13, the upper end of which extends above the discharge end of the feed-apron 11, so as to prevent raisins passing over beyond, and the raisins thus pass between the drum and this fender. The fender may be adjusted to or from the drum to suit requirements by the adjusting-screws, as shown at 14.

Within the fender is a flexible apron which I here designate as being made of canvas 15 or other similar suitable material. The upper edge of this canvas is fixed to the fender or some convenient point above the drum, and the canvas extends partially around the face of the drum within the fender. Light springs 16 are designed to press upon the outside of the canvas, so that it will be held in light contact with the raisins or fruit which pass between it and the drum 12 as the latter revolves. Thus the action which takes place between the stationary apron and the drum and the intermediate raisins will cause the latter to be continually rolled over and over and pressed against the surface of the drum, so that during their movement every portion of a raisin will be at some time presented, so that any cap-stems projecting will pass through the openings in the screen-surface of the drum.

Within the drum are a series of rubbers or brushes 17, which are revolved in the opposite direction to the revolution of the drum, and these brushes catching the cap-stems which are projected through, as before described, will push them from the raisins, thus leaving the latter in a clean condition. While a great portion of this work may be completed by a single drum, I have here shown a second drum 18, inclosed by a fender 19 and having a canvas spring-pressed apron within it similar in all respects to that previously described. This drum is also revolved,

so that the raisins delivered from the lower end of the fender 13 will pass directly over the top of the drum 18 and within the fender 19 on the spring-pressed canvas 20, where they will again be rolled over the screen-surface and subjected to the action of another set of brushes 21, which are revolved within the screen 18. These brushes are adjustable by means of slotted sliding plates, as shown at 22, so as to give any desired pressure upon the interior surface of the screen-covered drum. From the lower end of the fender 19 the fruit is delivered to any suitable carrier or receptacle. As here shown, I have delivered it upon another elevating-apron 23, from the upper end of which it passes over a tail-board 24, and the fruit sliding by gravitation over this tail-board passes through a blast of air delivered from the fan 25, which serves to blow away all the dust, dirt, cap-stems, and other matter which may up to this point have been associated with the raisins. The raisins are then delivered in a clean condition to any receptacle, elevator, or other means for disposing of them.

26 is a fender so situated with relation to the tail-board 24 and the fan-blast as to prevent the raisins from being thrown out and lost by too strong a discharge.

It will be understood that the sizes of the drums of the various parts may be varied to suit the work to be done. Where as large as from fifty to eighty tons of fruit are to be handled daily, the drum 12 may be about thirty inches long and the fruit delivered upon this drum in a sheet about ten inches wide. Passing around the drum it will be spread, so that when it leaves the lower end of the fender 13 it will have been spread to about the full width of the drum. The drum 18 may be made about forty inches in length, and the fruit passing around this drum will again be spread to approximately the full width of this drum, so that when traveling from the source of supply of the other drum to the discharge from the lower drum it will constantly diverge and become thinner and wider spread, so that every portion of the fruit will be acted upon before it has left the apparatus.

Various driving devices may be employed. As here shown, the shaft 27 of the upper drum 12 has fixed upon its end the tight and loose pulleys 28, by which the shaft may be either driven or caused to stop. Through these pulleys the brushes inside the drum 12 are driven. 29 shows also tight and loose pulleys, which are fixed upon a sleeve 30. This sleeve is loosely turnable upon the shaft 27, and passes through the journal-box 31 upon the supporting-frame. The inner end of this sleeve is securely connected with the spider or frame of the drum 12, so that this drum is driven from the pulleys 29 and may be revolved in one direction, while the pulleys 28, driving the shaft 27, may revolve the brushes 17 in the opposite direction. The shaft 27 passes across the other side of the frame and

has a sleeve 32 surrounding it and passing through the box 33 upon that side of the frame. Upon the sleeve 32 is a pulley 34, and upon the end of the shaft exterior thereto is another pulley 35. From the pulley 34 power is transmitted to the pulley 36, which drives the drum 18, and from 35 to 37, which is mounted upon the shaft 38, and this drives the brushes 21 within the drum 18. Upon the opposite end of the shaft 38 are fixed pulleys 39 and 40. From the pulley 39 a belt extends to pulley 41, which drives the top of the apron or elevator-belt 10. From the pulley 40 a belt passes to pulley 42 upon the fan-shaft, so as to drive the fan. Upon the opposite end of the shaft carrying the driving-pulley of the elevator 10 is a pulley 43, and from this pulley a belt passes to the pulley 44, which is at the top of the lower elevator 23. Thus all the apparatus is driven in an economical and convenient manner; but it will be understood that any suitable or desired arrangement of belt-pulleys, chain-wheels, gears, or frictional driving devices may be equally well employed, these being common and well-known equivalents of each other.

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

1. In a raisin-cleaner, the combination with a screen corrugated to form longitudinal channels, of an endless brush-belt adapted to travel parallel with the screen and to operate on the raisins as they travel through the channels.

2. A device for cleaning raisins and the like, consisting of a screen corrugated in the direction of travel of the raisins, an endless traveling belt having brushes projecting from its surface and adapted to contact with the raisins upon the screen, a second endless traveling belt having brushes fixed upon its surface and traveling parallel and in contact with the lower surface of the screen.

3. A device for cleaning raisins and the like, consisting of a corrugated screen, upon one end of which the fruit is delivered to be moved along the screen in the line of the corrugations, an endless traveling belt having brushes projecting from its surface and moving in contact with the raisins on the upper surface of the screen, a second endless traveling brush-carrying belt moving in the same direction below the screen and in contact therewith, and a third belt with brushes moving in contact with the screen and in a direction opposite to the first-named brushes.

4. In a device for cleaning raisins and the like, a corrugated screen and brushes adapted to move with relation to its surface as shown, and supports for the screen consisting of rods extending lengthwise beneath the arches of the corrugations with the tension screws and nuts.

5. In a raisin-cleaner, a revoluble foraminous drum, in combination with an opposing fender having a substantially-smooth un-

broken surface capable of elastic yield at any point and between which and the periphery of the drum the raisins pass.

6. In a raisin-cleaner, the combination with means for effecting a preliminary cleaning of the raisins, of a revoluble drum, and a fender concentric with the drum and having a substantially-smooth unbroken surface capable of elastic yield at any point and between which and the drum the raisins pass.

7. In a raisin-cleaner, the combination of a foraminous revoluble drum, a flexible fender opposing the same and acting on the raisins with a yielding pressure, and means interior to the drum and adapted to engage and remove the stems of the raisins which project through the foraminations of the drum.

8. In a raisin-cleaner, the combination of a foraminous, revoluble drum, a yielding fender opposing the same and acting with a yielding pressure upon the raisins, and revoluble brushes interior to the drum and adapted to contact with and remove the portions of stems exposed through the foraminations of the drum.

9. In a raisin-cleaner, a revoluble drum having a foraminous surface, means for delivering the fruit upon the upper surface of the drum, a fender opposing the drum and having a substantially-smooth unbroken surface capable of elastic yield at any point said surface, separated from the drum to form an intermediate space through which the raisins are rolled.

10. In a device for cleaning raisins and the like, a revoluble drum having a foraminous surface, means for delivering the fruit upon the upper part of the drum, a segmental fender extending partially around the drum with an intermediate space between which the fruit is carried by the revolution of the drum and capable of elastic yield at any point, and means for adjusting the fender to vary the space.

11. In a device for cleaning raisins and the like, a revoluble drum having a foraminous surface, means for delivering the fruit near the top of the drum, a segmental fender surrounding the drum with an intermediate space and a flexible apron interposed between the fender and the drum and capable of elastic yield at any point.

12. In a device for cleaning raisins and the like, a revoluble drum having a foraminous surface, a segmental fender surrounding the drum with an intermediate space, a flexible apron interposed between the fender and the drum and springs by which the apron is normally pressed toward the drum and against the fruit passing between it and the drum said apron capable of elastic yield at any point.

13. In a device for cleaning raisins and the like, a plurality of revoluble drums, a means for delivering the fruit upon the upper part of the uppermost drum, an adjustable and segmental fender partially surrounding the uppermost drum having a spring-pressed flexi-

ble apron within it between which and the drum the raisins pass, said fender capable of elastic yield at any point and acting to deliver the fruit near the upper part of the succeeding drum and a like segmental fender and spring-pressed apron encircling said succeeding drum.

14. In a device for cleaning raisins and the like, revoluble drums having partially-inclosing segmental fenders, flexible spring-pressed aprons capable of elastic yield at any point and between which and the drums fruit is caused to pass, means for delivering the fruit into said space near the upper part of the drum, a tail-board or screen over which the fruit is passed from the drums, and an air-

forcing blast mechanism by which the refuse is separated from the fruit.

15. A device for cleaning raisins and the like, consisting of foraminous revoluble drums, flexible aprons partially inclosing the drums, means for delivering the fruit between the apron and the drum and brushes contacting and rubbing against the interior surface of the drum.

In witness whereof I have hereunto set my hand.

HARRY EASTWOOD.

Witnesses:

S. H. NOURSE,
JESSIE C. BRODIE.