(No Model.)

J. PORTEOUS.

RAISIN GRADER.

No. 524,562. Patented Aug. 14, 1894.

Fig. 1.

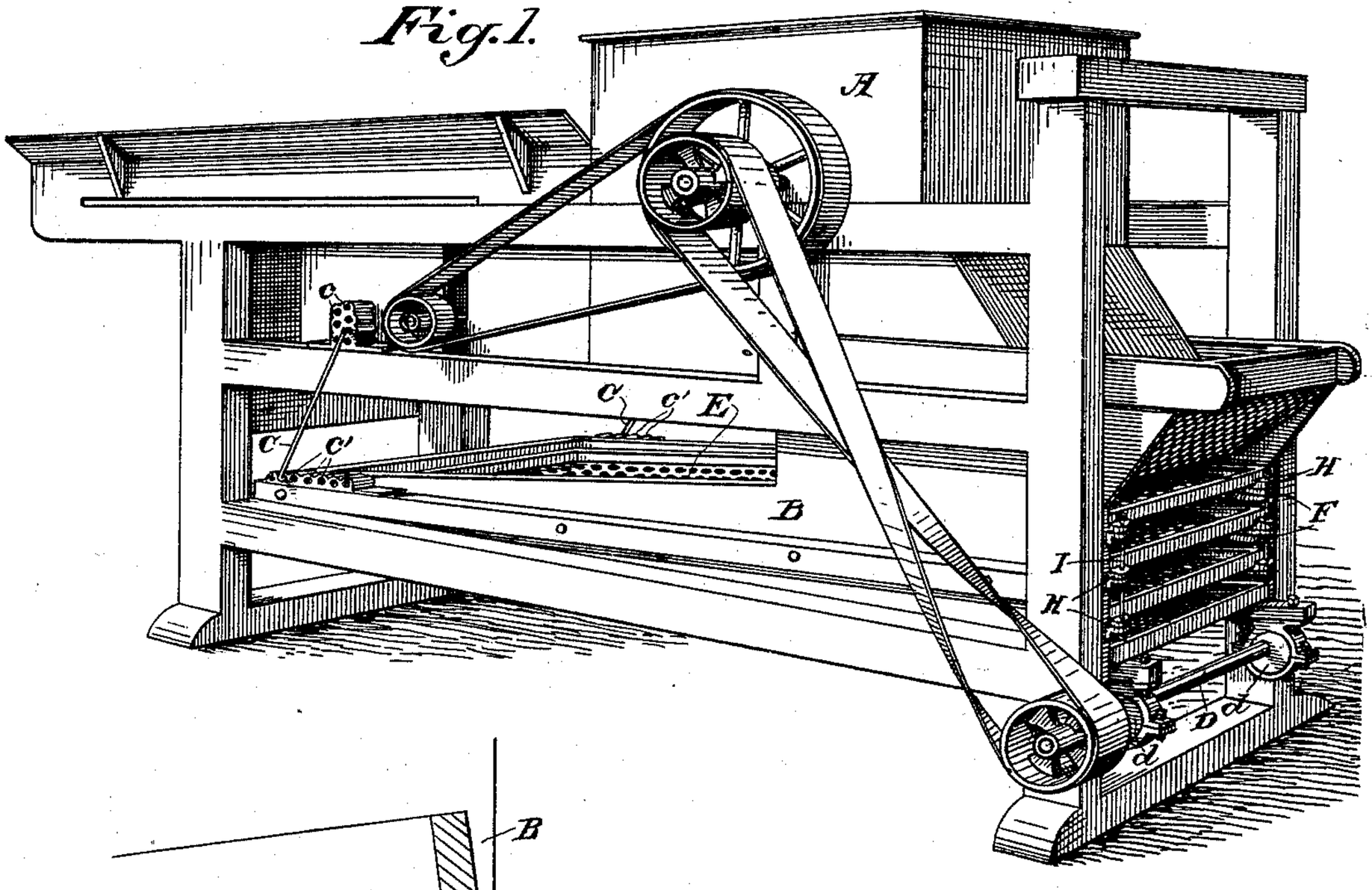


Fig. 3.

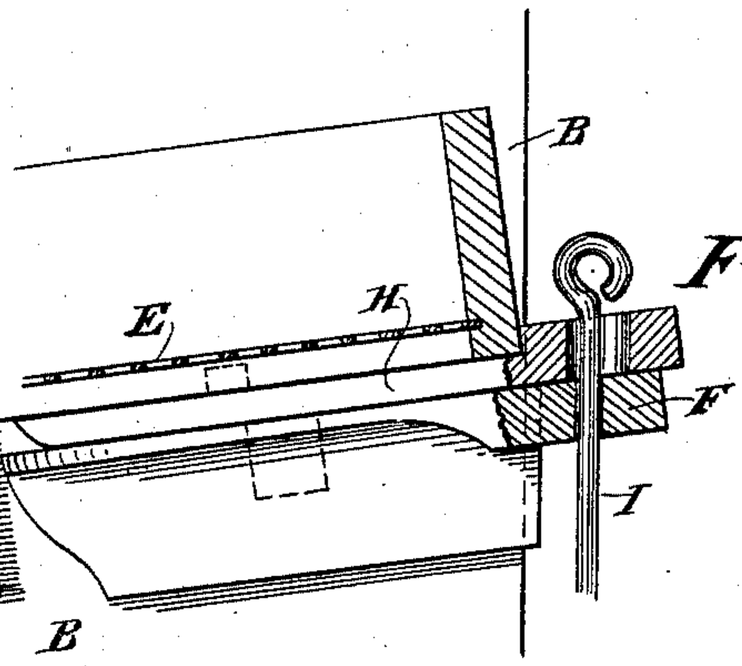
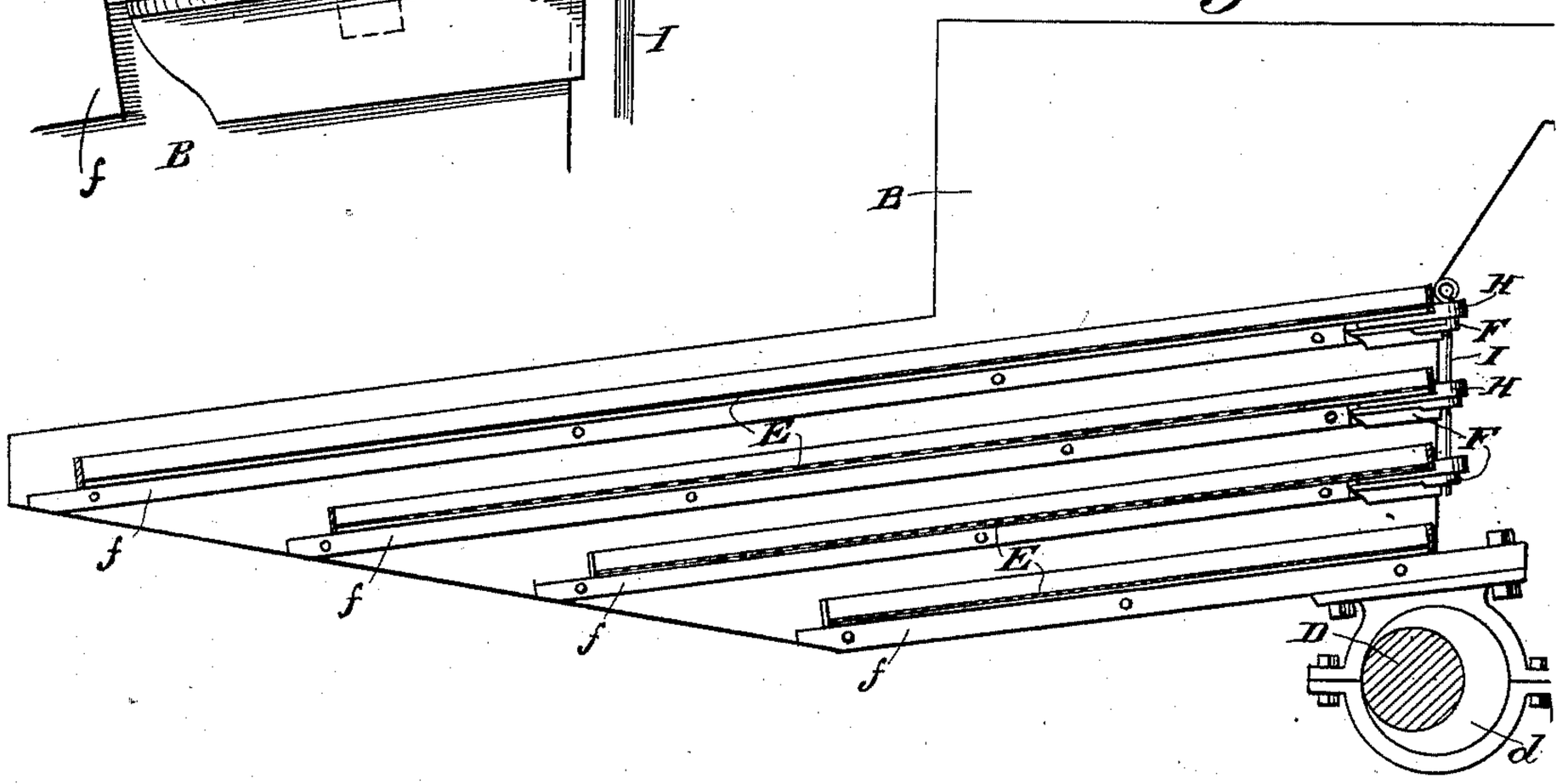


Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES PORTEOUS, OF FRESNO, CALIFORNIA.

RAISIN-GRADER.

SPECIFICATION forming part of Letters Patent No. 524,562, dated August 14, 1894.

Application filed January 10, 1894. Serial No. 496,424. (No model.)

To all whom it may concern:

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

My invention relates to the general class of devices for separating or grading particles of material according to their sizes, and in which a vibrating shoe carrying a series of sieves is employed.

My invention, though applicable to machines for separating various materials, is especially adapted for the grading of raisins, in which it forms a part of a general raisin mill embodying devices for cleaning and stemming, as well as grading.

My invention consists in the novel construction and arrangement of the several parts, which I shall hereinafter fully describe and specifically claim.

In graders of this character, wherein screens are mounted in a vibrating shoe, said screens have heretofore, as far as I am aware, been connected fixedly with the shoe, and have had no other movement than that of the shoe itself.

The object of my invention is, by imparting an independent movement to the screen or screens, accompanied by a jar or bump to effect additional agitation or impulse of the material which, especially in the grading of raisins, is of great advantage, in that it prevents the clogging of the perforations or meshes of the screens, a tendency which raisins, on account of their gummy character, invariably have.

Referring to the accompanying drawings for a more complete explanation of my invention,—Figure 1 is a perspective view of a raisin mill showing my grader. Fig. 2 is a vertical longitudinal section of the shoe and screens. Fig. 3 is a detail section showing the loose connection between the screen and shoe.

A represents generally the frame of what may be called a raisin mill, the parts of which need not be particularly described other than those referring to the grading portion. In the lower portion of this frame is mounted the inclined shoe B. This is pivotally suspended by means of links C, one or more on each side. These may be vertical, but where the raisins are particularly gummy and require to be shaken more vigorously, they are set at an inclination whereby they impart a movement to the shoe which is the result of a combined vertical and horizontal motion which gives a greater shake to the shoe and increased jar to the loose screen thereon. The suspending links are also adjustable, both horizontally and vertically, whereby the resultant motion may be varied as required. This adjustability is effected by means of the upper vertical series of holes *c*, and the lower horizontal series of holes *c'* in which the ends of the links are pivotally mounted. The upper or head end of this shoe may be suspended from links such as C, but I have shown it as mounted upon eccentrics *d* on a drive shaft D, by the rotation of which, in connection with the suspending links, the shoe is given a peculiar combined vertical and longitudinal movement, which may be termed a shake or vibration. In this shoe is carried a screen E, or as I have here shown, a vertical series of screens, having different perforations or meshes to effect the grading of the raisins into different sizes.

I have found by experience that the agitation imparted to the raisins by the mere shaking of the shoe, at a proper rate of speed, is not sufficient to keep the meshes or perforations of the screens free, and there is a tendency, on account of the gummy character of the raisins, to clog the screens. To remedy this diffiulty I have not connected the screen or screens rigidly with the shoe. The former may have, therefore, a sliding movement in the shoe in the direction of their length, and may also have an up and down movement, both independently of the shoe, said movements being occasioned by the continuance of the movements of the screens at the ends of the stroke of the shoe. The inclined links suspending the shoe give, by their adjustments, more or less jar to the screens set loosely upon it. This additional movement or movements of the screens gives such increased agitation or sharp impulse to the material that the tendency to clog or gum up is overcome, for the sharp blow dislodges a raisin fast in a hole, either by making it fall

through or by passing it on over the screen. This movement is accompanied by a jar or bump which may be effected in any suitable manner as by providing suitable stops for the ends of the screens, and it is also effected by the drop of the screen on the shoe in its up and down movement. I have found the best construction, however, to be that here shown, in which there are secured to the inner surface of the sides of the shoe, at its head end, the brackets F, beyond which are the guides *f* on which the screens rest.

Under the sides of the screens, at their head ends, are the wearing plates H which lie freely upon top of the brackets F. These plates are rigidly bolted and secured to the screens. Rods I pass down through the extremities of these plates and of the brackets, and the holes through which they pass are sufficiently larger than the rods to give them a free lateral play therein. It follows, therefore, that when the shoe is vibrated, the screens in accompanying it will have also the additional movements of their own, both up and down and in sliding on their bearings in the shoe to the extent of the lateral play of the rods I, and these movements will be accompanied by the jar or bump occasioned by the bringing up of the rods and their limitation in the holes in which they are seated, and also by the drop of the screen on the shoe. Thus the increased or supplemental agitation and impulse, jar or bump are given to the material whereby the result of avoiding the clogging of the screens is effected.

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

1. In a grader or separator, and in combination with a vibrating shoe, a screen supported loosely upon and secured at one end to said shoe and having its opposite end free to move in vertical planes whereby said screen may have in addition to the movement of the shoe an independent vertical movement of its own, substantially as herein described.

2. In a grader or separator, and in combination with a vibrating shoe, a screen supported loosely upon said shoe, having one end secured to the shoe and the opposite end unconnected whereby it may have in addition to the movement of the shoe an independent movement of its own in vertical planes, and means for limiting said independent movement of the screen to produce a jar or bump, substantially as herein described.

3. In a grader or separator, the combination of a vibrating shoe, a screen supported loosely thereon with its lower end free and unconnected so that it may have, in addition to its movement with the shoe, an independent movement of its own in vertical planes, and a rod loosely connecting the upper end of the screen to the shoe, whereby the screen is limited in its independent movement and is subjected to a jar or bump.

4. In a grader or separator, the vibrating shoe having the guides on its inner side, and the brackets at its head end, in combination with a screen mounted loosely upon said guides, and having plates secured to its under side and resting freely on the brackets of the shoe, and rods seated loosely in holes in the extremities of the plates and brackets, and connecting the head end of the screen to the shoe, said screen having its opposite end free and unconnected, substantially as herein described.

In witness whereof I have hereunto set my hand.

JAMES PORTEOUS.

Witnesses:
S. H. NOURSE,
H. F. ASCHECK.