(No Model.)

G. SANFORD.

MACHINE FOR REDUCING SUBSTANCES AND EXTRACTING JUICES.

No. 285,165. Patented Sept. 18, 1883.

Fig 1.

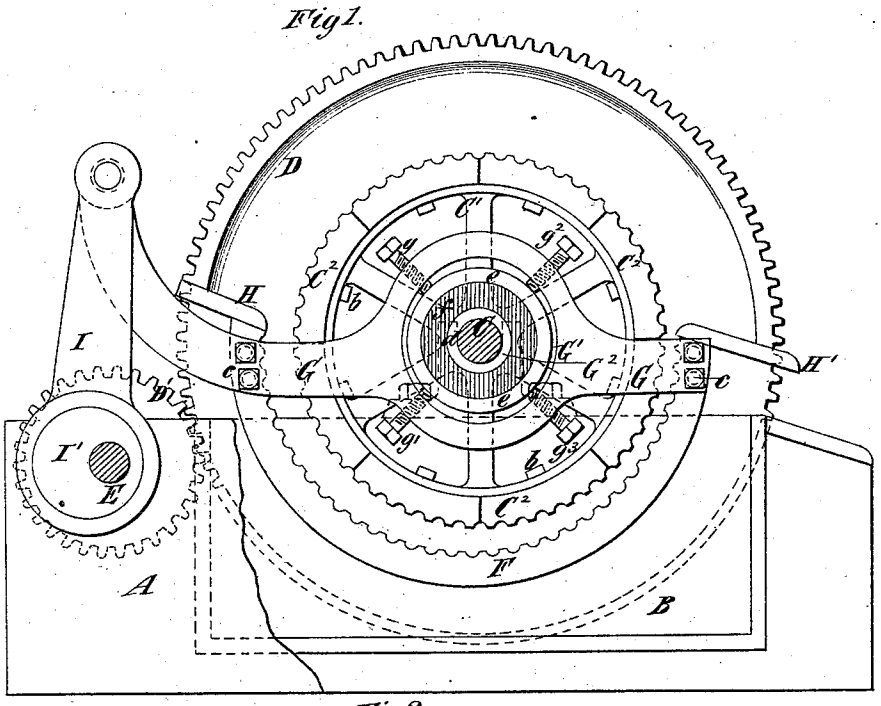
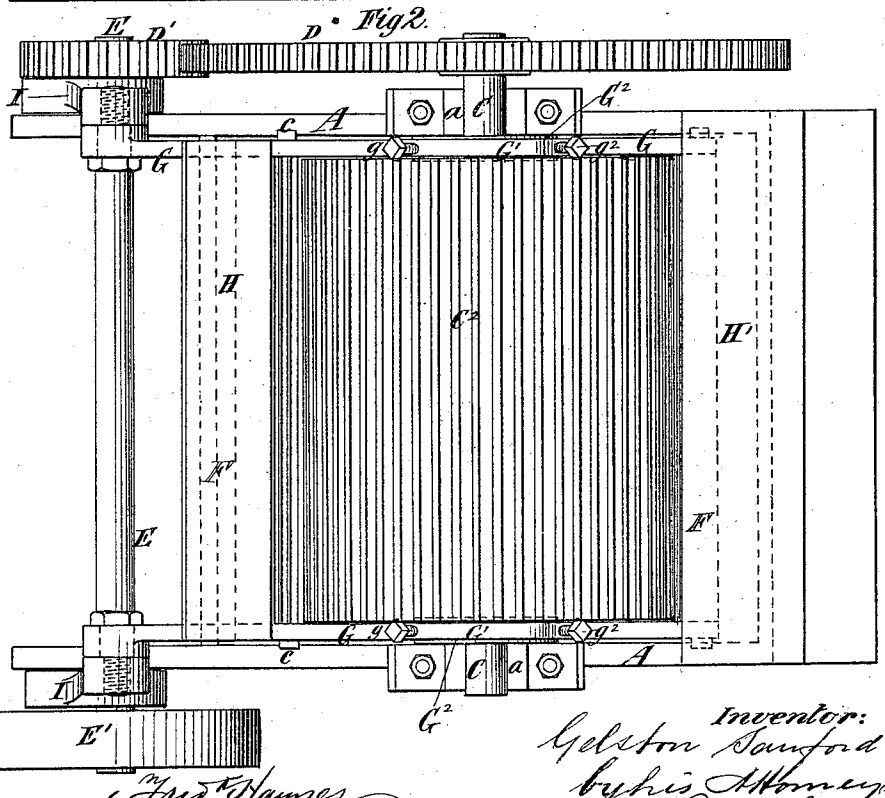


Fig 2.



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UNITED STATES PATENT OFFICE.

GELSTON SANFORD, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE INTERNATIONAL FIBRE AND JUICE EXTRACTING COMPANY, OF NEW YORK.

MACHINE FOR REDUCING SUBSTANCES AND EXTRACTING JUICES.

SPECIFICATION forming part of Letters Patent No. 285,165, dated September 18, 1883.

Application filed March 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, GELSTON SANFORD, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Machines for Reducing Substances and Extracting Juices, of which the following is a specification.

My invention is applicable to machines for grinding or macerating fruit, sugar-cane and other stalks, and other substances to obtain juices therefrom; but it may be embodied in machines for grinding, reducing, or disintegrating various substances.

My invention consists in novel combinations of parts and details of construction, hereinafter described, and particularly referred to in the claims.

In the accompanying drawings, Figure 1 is a partly-sectional end elevation of a machine embodying my invention, and Fig. 2 is a plan thereof.

Similar letters of reference designate corresponding parts in both figures.

A A designate the side frames of the machine, which may be of any form and construction, and B designates a tank or vat located between said frames.

C designates a shaft, which is here shown as mounted in open bearings *a*, and is provided with a large gear-wheel, D, which receives motion from a pinion, D′, fixed upon a driving-shaft, E. This shaft E is journaled in the side frames, A, and motion may be imparted to it by a belt passing over a pulley, E′, fixed upon it.

Upon the shaft C is a cylinder, which may be of any suitable construction. It may, for example, consist of heads or spiders C′, fixed upon the shaft C, and strips or bars C^2, extending parallel with the shaft, and secured to the heads or spiders C′ in any suitable way—as, for example, by bolts *b*. The strips, pieces, or bars C^2 may be of wood, metal, stone, or any other suitable material.

F designates a bed or concave arranged below and extending upward on both sides of the cylinder. It may be made of any suitable material—such as stone, wood, or metal—and may be made in a single piece, or of several pieces connected in any suitable way. It may be perforated throughout for the escape of juice into the tank B; or it may be imperforate, and the juice or liquid may escape at the ends. The bed or concave F and the surface of the cylinder are or may be fluted or grooved from end to end, as here shown; or they may be otherwise roughened, so as to act effectively on materials introduced between them. The bed or concave is carried by levers G, which are supported on the shaft C. As here shown, a lever G is secured to each end of the bed or concave by bolts *c*, and the levers are provided with yokes, or have in them large openings G′, which receive loosely within them collars G^2, which are fitted to the shaft C, so that they will remain stationary while the shaft rotates. As here shown, the collars G^2 are composed of an inner ring, *d*, of metal, surrounding the shaft, an outer ring, *e*, of metal, and an interposed ring, *f*, of india-rubber. The levers are each provided with four set-screws, $g\,g'\,g^2\,g^3$, which bear on the collars G^2, and by adjusting these screws the space between the faces of the cylinder and bed or concave may be varied at pleasure. By loosening the lower screws, g' g^3, and tightening the upper screws, $g\,g^2$, the bed or concave may be raised relatively to the cylinder, so as to decrease the space between them, and by loosening the upper screws, $g\,g^2$, and tightening the lower screws, $g'\,g^3$, the bed or concave may be lowered, so as to increase the space between it and the cylinder. By loosening the screws $g\,g'$ or the screws $g^2\,g^3$, and correspondingly tightening either the screws $g^2\,g^3$ or $g\,g'$, the bed or concave may be shifted laterally relatively to the cylinder, and the degree of eccentricity of their faces correspondingly varied. The rings of rubber, *f*, form an elastic connection between the cylinder and the bed or concave, and permit them to yield relatively to each other, so that the materials introduced between them will be operated on with a yielding pressure. It is advantageous to support the bed or concave by means of yielding connections on the shaft of the cylinder, because the bed or concave can then not only move bodily toward and from the cylinder, but can yield at either edge relatively

to the cylinder, while the other edge will be brought nearer to the cylinder.

On one side of the bed or concave F is a feed-board, H, from which materials may pass into the space between the bed or concave and the cylinder, and which serves as a guard to prevent the materials from falling behind the bed or concave, and on the opposite is a board, H′, over which the material is delivered from the bed or concave, and which prevents it from falling into the tank B. The levers G are fulcrumed on the shaft C, and their ends are connected by rods I with eccentrics I′ on the driving-shaft E, by which an oscillating movement of the levers and bed or concave is produced.

I do not desire to limit myself to the means employed for supporting and operating the bed or concave, as it might be otherwise supported and operated by any suitable devices.

Instead of the cylinder having a shaft extending through it, short journals might be secured to its ends, and the levers G would then be supported on these journals.

I have not shown any caps for the bearings *a*, and none are necessary, because the pressure upward on the cylinder is counteracted by the downward pressure on the bed or concave, and there is no tendency to lift the cylinder.

For operating upon some materials, the tank B might not be used, and for other materials it might be desirable to use water in the tank, and have the bed or concave work in the water.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a cylinder having a rotary motion continuously in one direction, of an oscillating concave or bed arranged below the cylinder and extending upward on both sides thereof, substantially as and for the purpose described.

2. The combination, with a cylinder having a rotary motion continuously in one direction, of an oscillating concave or bed arranged below and extending upward on both sides of the cylinder, and having a yielding connection with the shaft or journals of said cylinder, substantially as and for the purpose described.

3. The combination of the cylinder, its shaft or journals C, the driving-shaft E, gearing for imparting a rotary motion from the shaft E to said cylinder, the bed or concave F, the levers G, supporting said bed or concave, fulcrumed upon the shaft or journal C and extending toward the shaft E, the eccentrics I′ upon the shaft E, and the eccentric-rods I, connected with said levers G for oscillating them, substantially as described.

4. The combination of the cylinder and its shaft C, the driving-shaft E, the pinion D′ and wheel D, for imparting motion to said shaft and cylinder, the bed or concave F, the levers G, the collars G^2, adjusting-screws between the levers and collars, and the eccentrics I′ and rods I, substantially as and for the purpose described.

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