A. B. LAWTHER.

MACHINES FOR CRUSHING OLEAGINOUS SEEDS.

No. 180,770. Patented Aug. 8, 1876.

Fig. 1

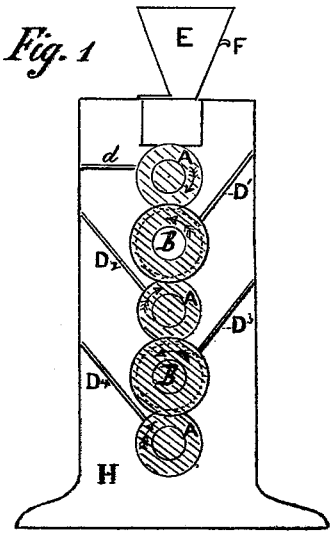
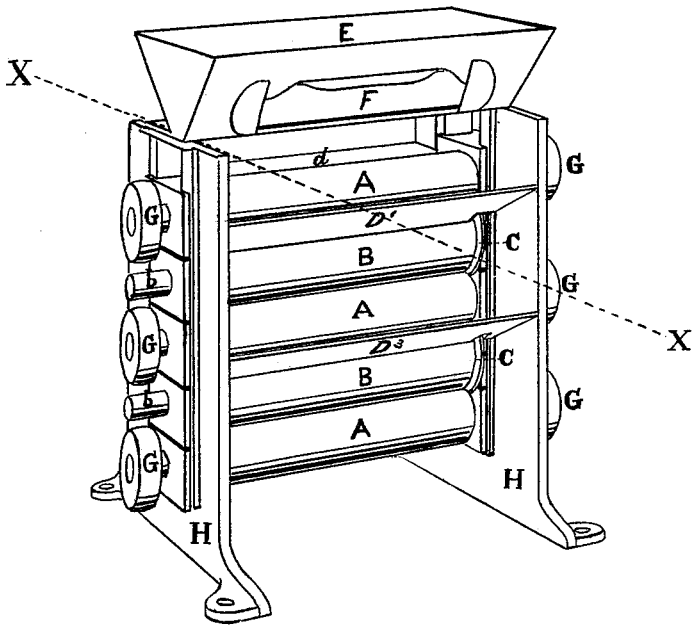


Fig. 2



Witnesses;

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UNITED STATES PATENT OFFICE

ALFRED B. LAWTHER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN MACHINES FOR CRUSHING OLEAGINOUS SEEDS.

Specification forming part of Letters Patent No. **180,770**, dated August 8, 1876; application filed July 22, 1876.

To all whom it may concern:

Be it known that I, ALFRED B. LAWTHER, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Machine and Process for Crushing Oleaginous Seeds for the purpose of expressing oil therefrom, of which the following is a specification and description.

Finding the former methods of crushing, moistening, and treating oleaginous seeds, for the purpose of procuring oil therefrom, to be defective and unsatisfactory in many respects, I have for several years been engaged in a series of experiments, discoveries, and inventions for the purpose of remedying such defects. Some of the results of my efforts in that behalf are set forth in the Letters Patent of the United States heretofore issued to me—namely, No. 161,691, April 6, 1875, for the crushing of oleaginous seeds; No. 163,933, June 1, 1875, for the moistening of such seeds, and No. 168,164, September 28, 1875, for a process for treating such seeds for the expulsion of the oil therefrom. The leading idea of my improvements for the more perfect crushing of such seeds has been, and is, to remedy the loss of oil from the want of uniformity in the crushing of the seeds, some of which are by the old machinery and process undercrushed while others are overcrushed, and to secure by new machinery and by new methods of operation the action of the machinery upon each individual seed, and thereby the breaking of the oil-cells of the individual seeds without reducing them to a pulp or pasty mass, but leaving them in such a condition that when properly moistened and subjected to the action of the press a larger proportion of oil would be obtained than has been secured by the previous machinery and modes of operation. Formerly the seeds were subjected to the crushing action of two rollers, not adjusted with any great nicety or acting with any great weight, supplemented with the rubbing or triturating action of edge stones or mullers, operating upon such crushed seeds in a considerable mass with defective results, as above described.

In the course of my experiments I have discovered, in addition to the improvements described in my former Letters Patent above referred to, that the most perfect crushing of individual oleaginous seeds, in the manner above described, can be secured by the use of an odd or uneven number of rollers—as three, five, seven, or the like—with the power applied to each end of all the odd numbers of rollers by belts in the usual manner, so that the odd-numbered rollers, being driven directly by the belts, will act by friction on both sides of the even-numbered rollers, causing them to revolve uniformly and crush the seed evenly while it is passing between them. By this arrangement of rollers and application of power the belts will always be connected with the two outer rollers, the set of rollers being, according to the most approved method, placed one above the other, whereby, among other improved results, is particularly secured a uniform motion of all the rollers, particularly of the bottom roller, upon which the pressure is naturally the heaviest, and which, under the former method in use before my present improvement, was frequently retarded or stopped for the want of the proper power and uniformity of motion required to do the work imposed upon the machine.

By my improved crushing-machine, consisting of an uneven number of rollers in a set, arranged and adjusted as above described, I obtain such a complete and thorough crushing of the seeds that I am enabled altogether to dispense with the usual muller-stones or edge-runners, thereby saving a considerable amount of machinery and expenditure of time and power, and am also enabled, by a proper adjustment of the rollers, and the use of a sufficient number—five being sufficient for all ordinary purposes—also to dispense with the feeding of the seed-rollers under pressure secured by an upright supply-pipe of suitable height filled with seed, according to my Letters Patent, No. 161,691, referred to above.

By the individual crushing of the seed with my improved machine I also secure a greater yield of oil, and an oil-cake much superior in quality to that produced by the old machinery and method, as, after the breaking of the oil-cells in the individual seed, its identity is still measurably preserved instead of being lost, as under the muller-stone process, in a pasty mass.

To enable others skilled in the art, and having the proper authority so to do, to make or use my said machine, I give the following description of its parts, construction, and operation.

Referring to the annexed drawing, Figure 1 is a transverse sectional view, and Fig. 2 a general perspective view, of my invention.

A A A are rollers, which are driven by power, connecting by belts or other suitable contrivance with the pulleys marked, respectively, G. B B are rollers, which are driven by the friction derived from the pressure of the rollers A A A. The seed to be crushed, being placed by any suitable means in the hopper E, falls through the opening made by raising the slide F to the guide-board D^1; thence passes between the upper and second rollers to the guide-board D^2; thence between the second and third rollers to the guide-board D^3; thence between the third and fourth rollers to the guide-board D^4; thence between the fourth and bottom rollers to a proper receptacle, when the process of crushing is completed. The guide-boards also act as scrapers, their lower edges being so placed as to scrape off the crushed seed from the rollers, respectively, below them. The board or plate *d* acts as a scraper only.

It is obvious that as the seed descends it is subjected to increasing pressure, proportionate to the increasing weight of the superincumbent rollers.

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

1. An improved machine for crushing oleaginous seeds, composed of an odd or uneven number of rollers, adjusted with relation to each other, and operated by power and friction, to secure the complete and uniform individual crushing of the seeds, substantially in the manner and for the purpose above described and set forth.

2. An improved process of subjecting oleaginous seeds to the action of an odd or uneven number of crushing-rollers, arranged and adjusted, as above set forth, for the purpose of securing the complete and uniform individual crushing of the seeds, for the purpose of obtaining a greater yield of oil therefrom, when properly moistened and subjected to the press, as described in the specifications of my Letters Patent above referred to for moistening and treating oleaginous seeds.

ALFRED B. LAWTHER.

Witnesses:
C. C. BONNEY,
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