

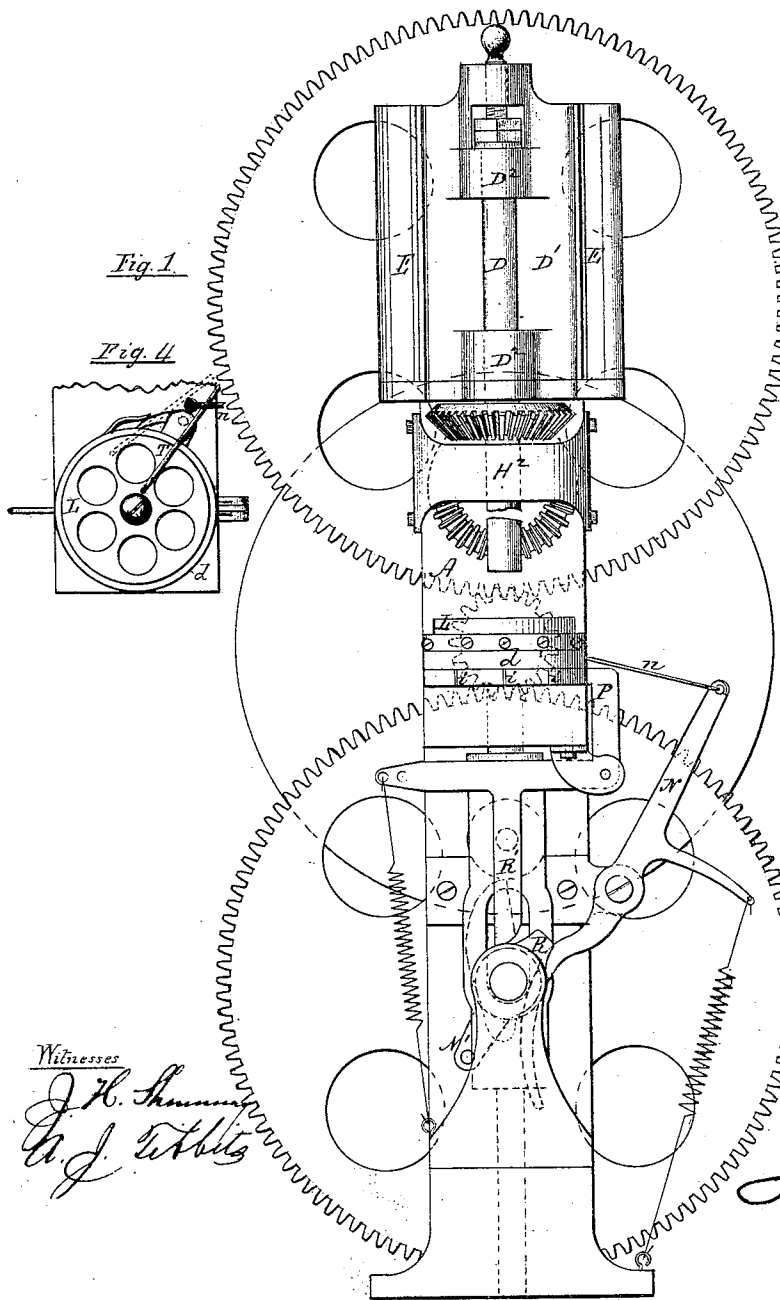
J. C. Ford,

3. Sheets, Sheet. 1.

Plumbago Press.

No. 101,358.

Patented Mar. 29. 1870.



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# United States Patent Office.

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Letters Patent No. 101,358, dated March 29, 1870.

## IMPROVEMENT IN PLUMBAGO-PRESS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, JOHN C. FORD, of Cambridgeport, in the county of Middlesex and State of Massachusetts, have invented a new Improvement in Plumbago-Press; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent in—

Figure 1, a front view;

Figure 2, a side view;

Figure 3, a vertical central section; and in

Figure 4, a top view of the die.

This invention relates to a machine for compressing plumbago or similar material into blocks or cakes for market, designed with special reference to the preparation of stove-blackening, the form of the cake to be cylindrical, flat upon one end and convex upon the other; and

The invention consists in the combination of two vertical plungers, to one of which a revolving movement is given, with a die into which the said plungers play, one from above and the other below, the die constructed to receive the material, and the plungers operating to compress the material, the revolving plunger to smooth and polish one end.

A is the frame which supports the operative mechanism.

B, the driving-shaft, to which power is communicated, through the pulley B<sup>1</sup>, to cause the revolution of the said shaft, and which power is communicated to an upper shaft, C, and lower shaft, C<sup>1</sup>, through a pinion, C<sup>2</sup>, on the main shaft, and gears C<sup>3</sup>, on the upper and lower shafts.

D is the upper mandrel, supported on a slide, D<sup>1</sup>, and so as to revolve in bearings D<sup>2</sup>, the said slide arranged so as to move vertically in guides E; and the said slide is thus moved vertically by a crank, a, on the shaft C, attached to the slide by a connecting-rod, F, as seen in fig. 3, so that, by each revolution of the shaft C, a downward movement and return is given to the slide, represented in fig. 3 as the extreme downward movement, and in fig. 2 as the extreme upward movement, thus imparting to the mandrel D an upward movement; and to the said mandrel is given at the same time a constant rotary movement by the shaft C, receiving its power from the shaft C<sup>1</sup> by a gear, G<sup>1</sup>, and imparting the same to the mandrel by bevel-gears H and H<sup>1</sup>, the gear H<sup>1</sup> being held in a fixed position on a bearing, H<sup>2</sup>.

I is the lower mandrel, (see fig. 3,) to which a vertical movement only is imparted by means of a cam, I<sup>1</sup>, on the shaft C<sup>1</sup>, working in a slot or frame, I<sup>2</sup>, to which the mandrel is attached or forms a part.

L is a die or block, pierced so as to permit the two mandrels to pass in from the top and bottom, as seen in fig. 3.

At the time when the lower mandrel I is at its lowest position, as denoted by broken lines, fig. 3, the upper mandrel will be up out of the die. Then the material to be compressed is placed in the die, and the mandrels approaching each other compress the material in the die. The upper mandrel revolving, smooths and finishes the upper surface; the lower mandrel not revolving, may be cut to give any desirable impression to the lower surface. And when sufficiently compressed the upper mandrel rises, and the lower mandrel does the same, by the action of its cam, until the material which has been pressed is taken therefrom; then the lower mandrel will drop, to permit the refilling of the die.

To facilitate the operation of the machine, the die L is of circular form, and pivoted at l, so as to revolve upon the said pivot; and the die is perforated at several places around and equidistant from the said pivot, so that the perforations, as the dies revolve, are successively presented to the mandrels, and while the material in one die is being compressed, the other perforations or openings in the die may be filled.

The die is rotated, to automatically present the filled openings to the mandrels, by means of a frictional band, d, connected to a lever, N, by a rod, n, operated by a cam, N', on the shaft C<sup>1</sup>, which, at each revolution, strikes the said lever and forces its upper end toward the die, turning the die and frictional band d the extent of the cam movement, at which point the die is caught by a pawl, P, dropping into one of the notches t, as seen in fig. 1, the said pawl P being thrown from the notch at the required time by means of a cam, R, acting upon a lever, R', which is connected to the pawl, the frictional band being arranged in the usual manner for such revolution, so that on its return the band is loosened, and does not affect or move the die.

To throw the compressed cake or block from the machine after it is raised from the die by the mandrel I, I arrange a vertical shaft, S, (see fig. 2,) to which, at the proper time, a partial rotation is given by means of a cam, t, acting upon an arm, r, on the said shaft; and another arm, T, is arranged so that, when the lower mandrel is at its full height, as seen in fig. 2, supporting the compressed cake flush with the surface of the die, the arm T swinging over the die will remove the finished cake from the machine, and then return to its first position.

I claim as my invention—

1. In a press for forming plumbago or other material into cakes or blocks, the combination of the two

mandrels D and I, to one of which a vertical movement is imparted, and to the other a combined vertical and revolving movement, arranged and operating in a die, L, substantially as set forth.

2. In combination with the two mandrels, constructed and operating together as described, the rotating die L, having several openings, and each open-

ing successively presented to the mandrels by means of the cam N' and its connections, substantially as described.

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Witnesses:

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