

(No Model.)

E. A. BLAKE.  
BLACK LEADING MACHINE.

No. 316,229.

Patented Apr. 21, 1885.

Fig. 2.

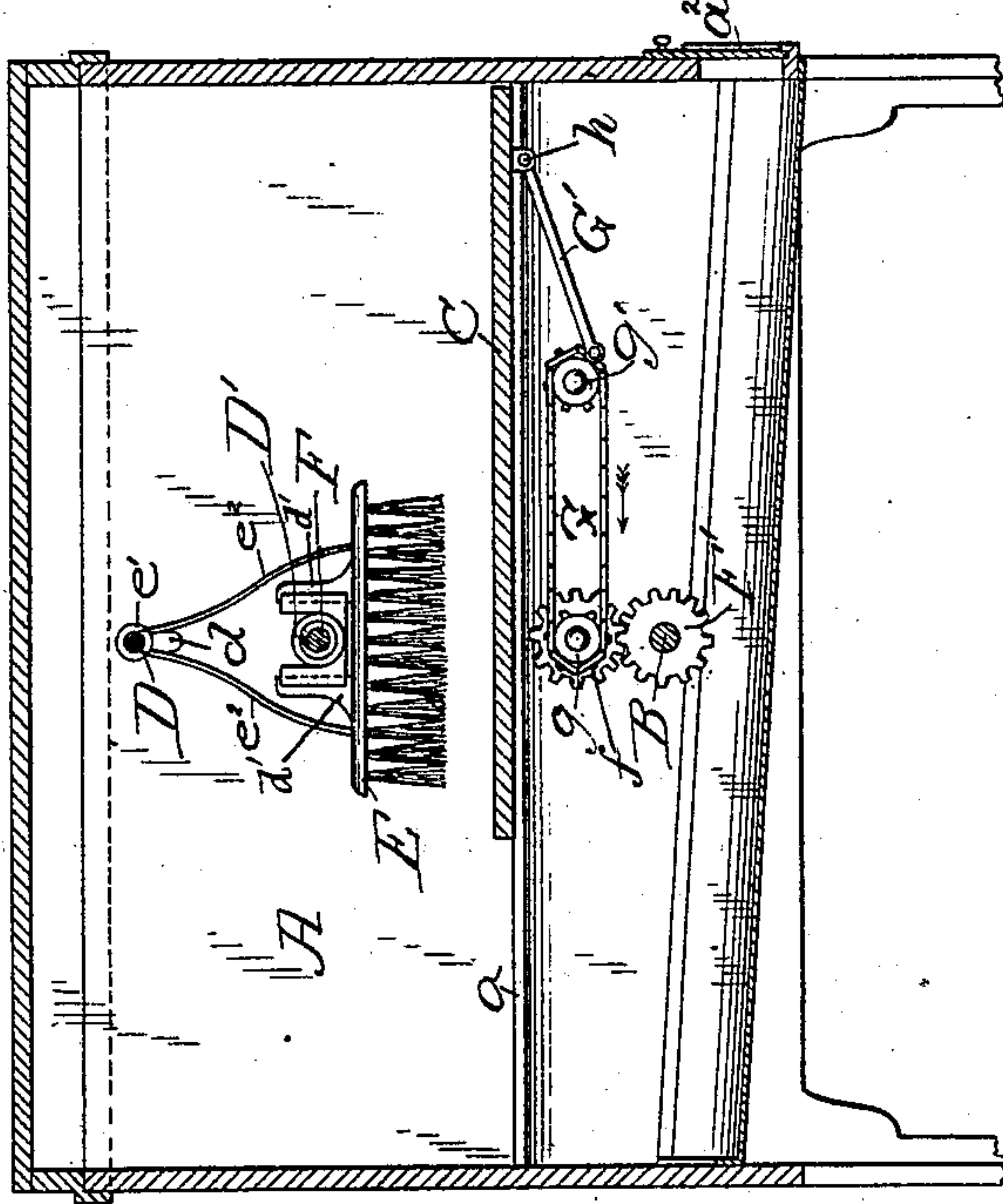


Fig. 1.

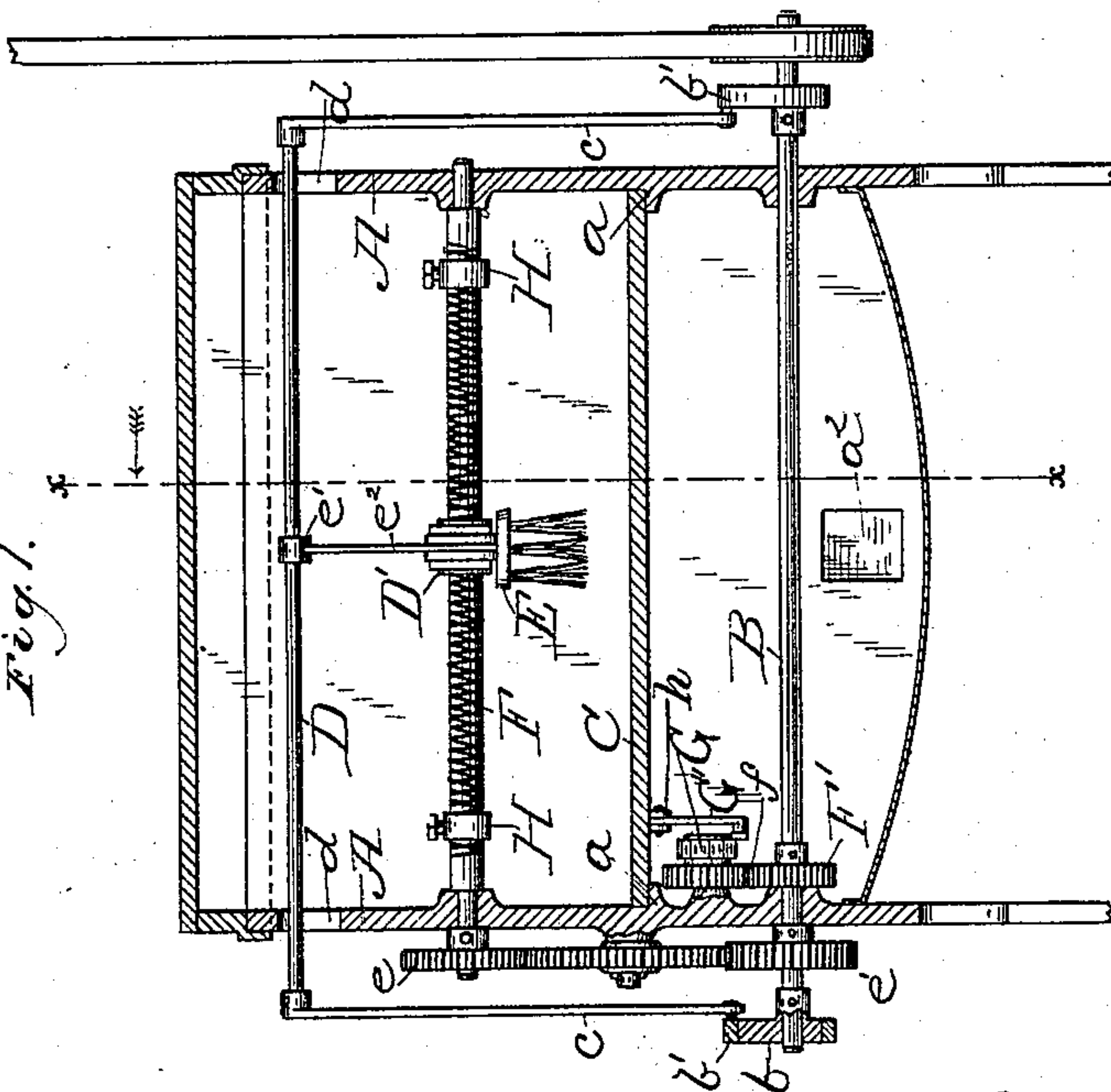
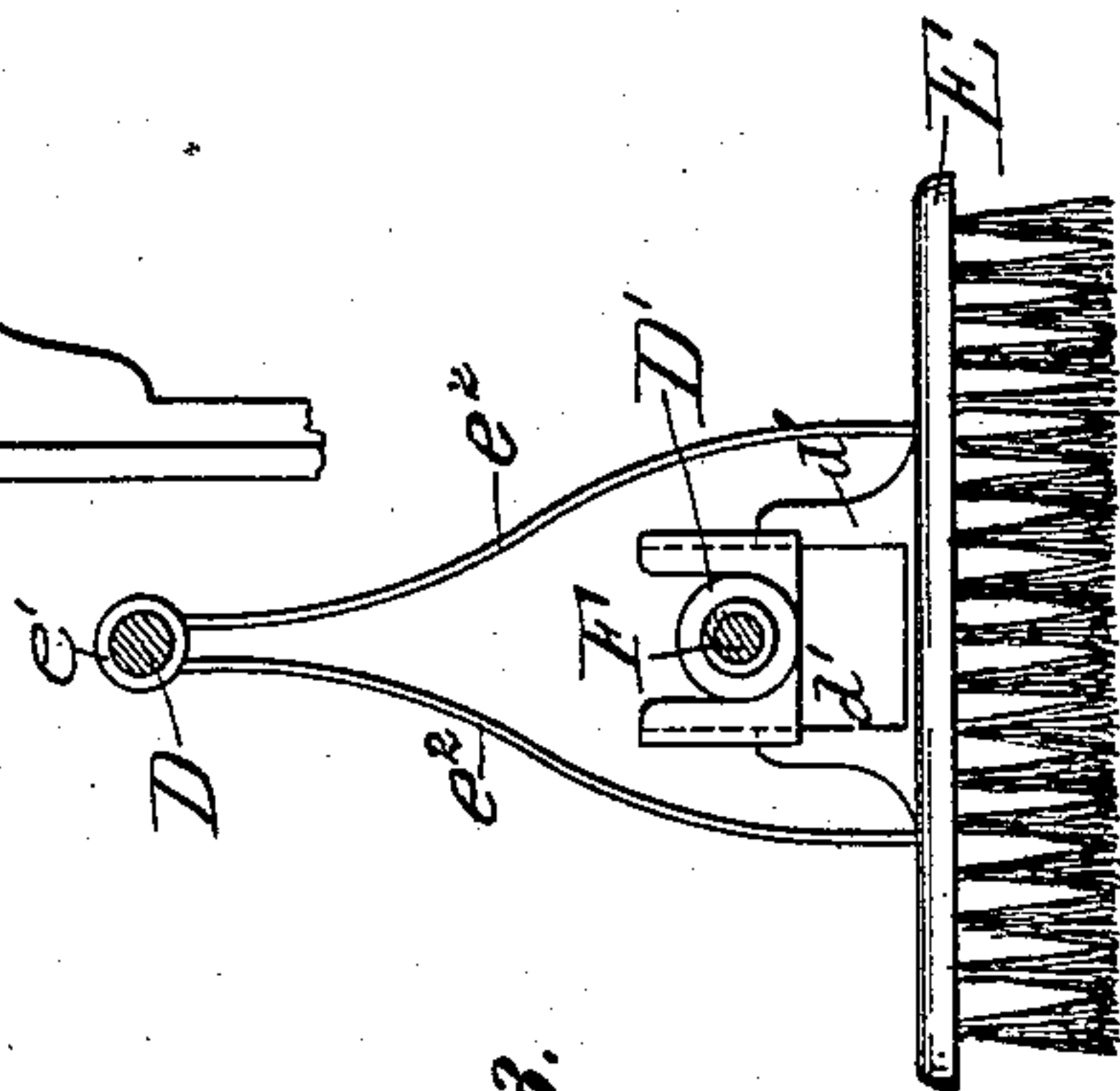


Fig. 3.



Witnesses,

Henry Frankfurter,  
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Inventor,  
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By James H. Coyne  
Atty



# UNITED STATES PATENT OFFICE.

EDWARD A. BLAKE, OF CHICAGO, ILLINOIS.

## BLACK-LEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 316,229, dated April 21, 1885.

Application filed January 26, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD A. BLAKE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Black-Leading Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Among the objections that have heretofore existed to black-leading machines is the inability to thoroughly distribute the black-lead in all the interstices and irregular cavities of the matrix, especially those which are oblique to the sides of the same.

The object of my invention is to overcome the above-mentioned objections, and this I accomplish by giving the vibratory distributing-brush a motion at right angles to that of the bed carrying said matrix.

In the drawings, Figure 1 is a transverse vertical section on the vertical plane of the drive-shaft. Fig. 2 is a longitudinal vertical section taken on the line  $x x$ , Fig. 1, and Fig. 3 is a detail view showing a side elevation of the distributing-brush.

Reference being had to the drawings, A represents the box-shaped frame of said machine, supported on suitable legs, and having suitable bearings near its center of length for the drive-shaft B. The box-frame A has an inclined canvas or oil-cloth bottom into which the black-lead settles, and from which it is easily scooped off through the door  $a^2$  at one end thereof, as shown. On the inner longitudinal sides of said box-frame are the ledges  $a a$ , upon which the bed C rests and moves. The said drive-shaft B has a pulley fixed on one end, or, if desired, two pulleys—a fast one and a loose one—through the medium of which motion is imparted thereto. Fast on the said drive-shaft, just outside of the bearings thereof, are the eccentrics  $b b$ , surmounted by the rings  $b' b'$  on the lower ends of the links  $c c$ , the upper ends of which latter are connected by the transverse rod or bar D. This rod D passes laterally through the vertical slots  $d d$ , made in the sides of the box-frame above and across the bed of

the machine on the same vertical plane as the drive-shaft. On the same vertical plane as said drive-shaft, and between the bed C and the cross-bar D, is a right and left screw, F, having bearings in the sides of the box A, and having a gear,  $e$ , on one end, which, through the medium of an idle-gear, derives motion from the gear  $e'$  on the corresponding end of the shaft B. On this screw, between the bearings thereof, is a boss, D', tapped to move longitudinally on said screw, or having pins extending from its inner periphery which enter the space between the screw-threads of the said screw F. The vertical sides of this boss are provided with mortises into which corresponding tenons projecting from the contiguous inner vertical surfaces of the projection  $d' d'$ , extending from the back of the brush E, enter.

Loose on the rod D, immediately over the brush, is a sleeve,  $e'$ , and depending from this sleeve are the arms  $e^2 e^2$ , the lower ends of which are connected to and support said brush. Thus as the machine operates the right and left screw carries the boss D' from one end of the screw-thread thereon to the other back and forth. At the same time the rod D, through the medium of the arms  $e^2 e^2$ , imparts a vertical vibratory motion to the brush.

On the screw on either side of the brush are collars H H, which are held in any given position by suitable set-screws. These collars are located with reference to screw-thread, and are adapted to reverse the motion of the brush, and thus regulate the reciprocal throw of the same.

Arranged underneath the bed is suitable mechanism for imparting a reciprocal motion to the same, which is, as hereinbefore stated, at right angles to that of the brush. Thus it will be observed that the action of the brush is lateral and longitudinal and at the same time oblique on the matrix, thus thoroughly distributing the black-lead in all the depressions and interstices thereof.

In order to give the bed its reciprocal motion on the ledges  $a a$  of the box-frame, I place on and make fast to the drive-shaft, just within its bearings, a small gear, F', which meshes with a corresponding gear,  $f$ , loose on a stud projecting from the adjacent side of the box-frame. Above said shaft, secured to or made integral



with the gear *f*, is a sprocket-wheel, *g*, around which and the corresponding sprocket, *g'*, journaled on a suitable stud and on the same horizontal plane a suitable distance away, the endless chain *G* is made to travel. Extending laterally from one of the links of this chain is a stud to which one end of the connecting-rod *G'* is pivoted. The other end of this connecting-rod *G'* is pivoted to a suitable lug, *h*, depending from the under surface of the bed *C*, and will, as the chain *G* is carried around the sprockets *g* and *g'*, move the bed back and forth.

I lay no claim to the particular mechanism shown and described for imparting a reciprocal motion to the bed, nor do I wish to be confined to that shown and described for giving the lateral and vibratory motion to the brush; but as the principal feature of my invention is the giving of the brush a vertical vibratory motion, and at the same time a motion at right angles to the bed,

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

1. The combination of the vertical reciprocating distributing-brush traveling at right angles to the bed, and said bed reciprocating lon-

gitudinally in said box-frame, substantially as set forth.

2. The combination, in a black-leading machine, of the brush *E*, boss *D'*, screw *F*, vertically-reciprocating cross-bar *D*, and means for imparting the motion thereof to said brush, as hereinbefore described.

3. In a black-leading machine, the combination, with the drive-shaft *B*, eccentrics *b b*, links *c c*, cross-bar *D*, and sleeve *e'*, having arms depending therefrom to support brush *E*, of said brush-boss *D'* and screw *F*, substantially as set forth.

4. In a black-leading machine, the combination, with the boss *D'*, right and left screw *F*, and brush *E*, of the collars *H*, arranged on said screw, and adapted to regulate the throw of the reciprocal motion of the brush.

In testimony that I claim the foregoing as my own I hereunto affix my signature in presence of two witnesses.

EDWARD A. BLAKE.

Witnesses:

JAMES H. COYNE,

FRANK D. THOMASON.