(No Model.)

G. E. LLOYD.

BLACKLEADING MACHINE.

No. 362,983. Patented May 17, 1887.

Fig. 1.

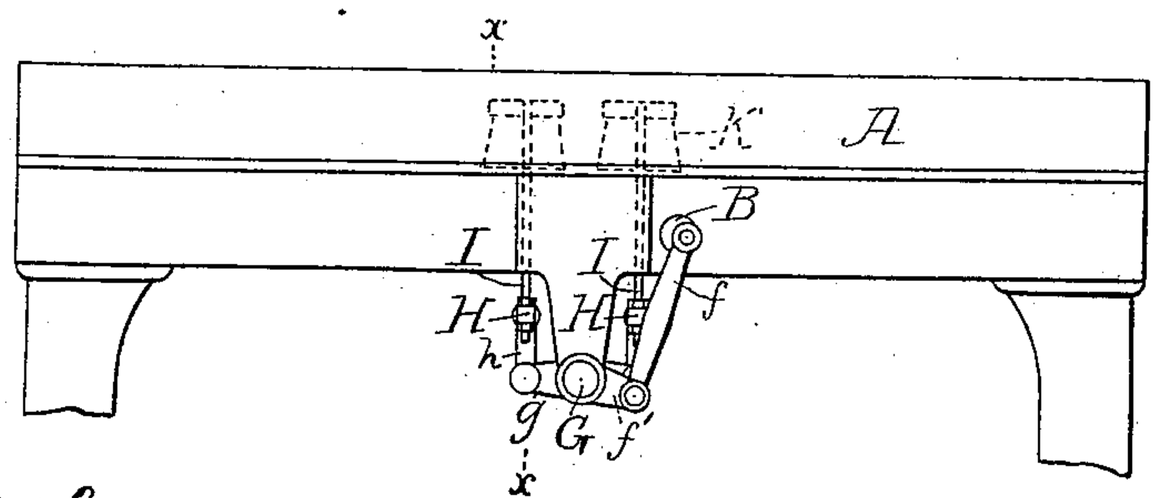


Fig. 2.

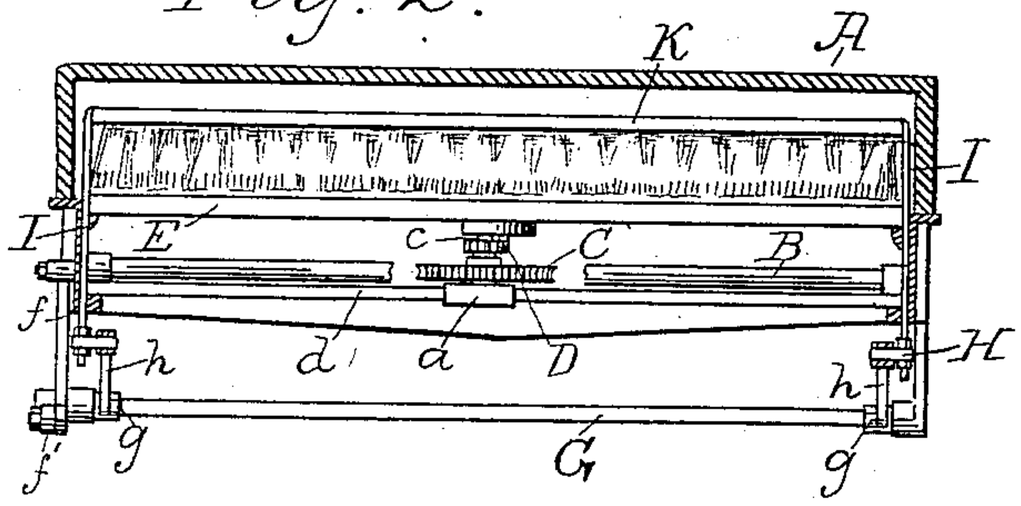


Fig. 3.

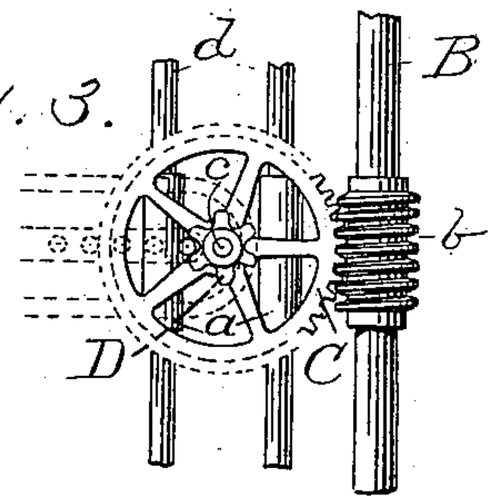


Fig. 4.

Fig. 5.

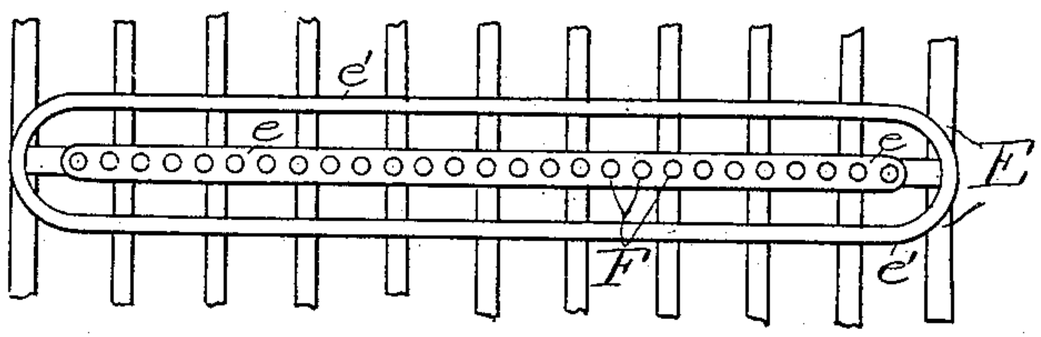


Fig. 7.

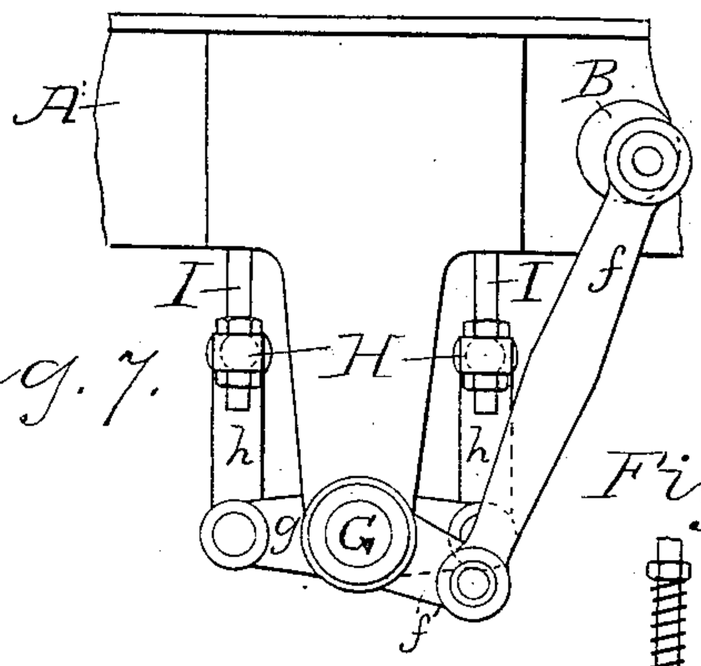


Fig. 6.

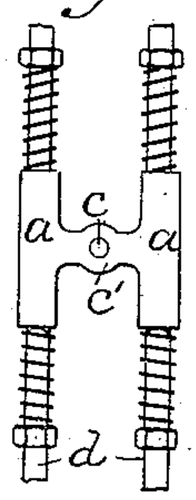
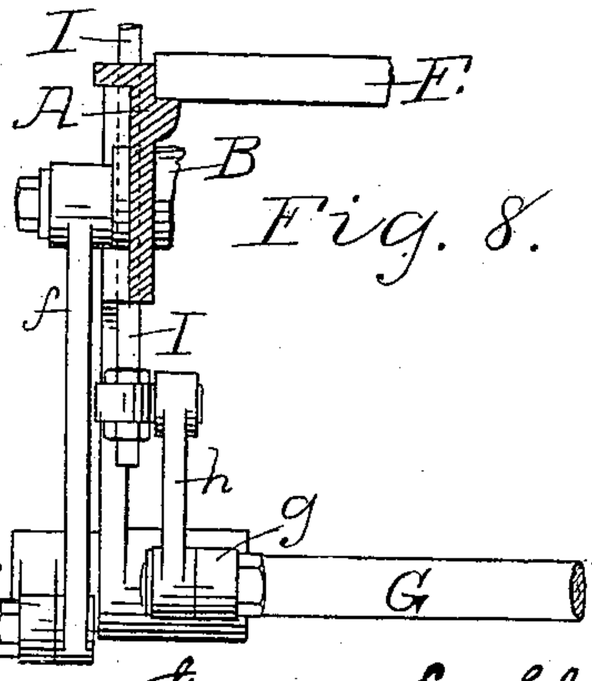


Fig. 8.



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GEORGE E. LLOYD, OF CHICAGO, ILLINOIS.

BLACKLEADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 362,983, dated May 17, 1887.

Application filed July 22, 1886. Serial No. 208,821. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. LLOYD, of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and valuable Improvements in Blackleading-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.

The object of my invention is to provide new and useful improvements in blackleading-machines whereby the mechanism for vibrating the distributing-brushes and reciprocating the bed are greatly simplified and cheapened without detracting from their efficacy, substantially as hereinafter described, and as illustrated in the drawings, in which—

Figure 1 is a side elevation of a blackleading-machine, showing my improvements applied thereto. Fig. 2 is a tranverse vertical section thereof, taken on line *x x*, Fig. 1. Fig. 3 is a detail view showing a plan of the bed-reciprocating devices. Figs. 4 and 5 are detail views of the bed, and Fig. 6 is a detail view showing a modification of the devices for reciprocating the bed. Figs. 7 and 8 are detail views of the brush-vibrating mechanism.

Reference being had to the drawings, A represents a rectangular case. Near the center of length of said case, and journaled in the sides thereof, is the transverse drive-shaft B. This shaft is provided about its center of length with a worm, *b*, which engages a horizontal worm-gear, C. Gear C is loosely journaled on a vertical stud, *c*, projecting from a bridge, *c'*, connecting the sleeves *a a*. Bridge *c'* and sleeves *a a* form a carriage for worm-gear C, and are capable of a longitudinal movement on the transverse rods *d d*, which pass through said sleeves and are secured in or to the sides of case A. The rods are parallel to the drive-shaft and a little below the horizontal plane of the same.

Secured to or made integrant with the boss of gear C is a spur-wheel, D, which meshes with a longitudinal series of pins, F, projecting down from the center of bed E. Bed E rests and moves on suitable ledges projecting from the inner surface of the sides of case A and is made open. The series of pins F project downward from a rib, *e*, made integrant with or secured longitudinally and centrally to the under surface of the bed. Surrounding this rib *e*, a suitable distance away, is a ledge, *e'*, thus forming a continuous tramway around said series of pins F.

In order to keep the spur-wheel D in engagement with pins F, I extend the stud *c* (rising from the worm-gear carriage) up into this tramway, and, if desired, journal thereon a friction-roller the diameter of which corresponds to the width of said tramway. Thus, when the drive-shaft is in motion, the worm thereon actuates the worm-gear and spur-wheel, and the latter, engaging each pin of the series F, consecutively, and being incapable of longitudinal movement, pushes said bed along until the end of series F is reached. The positive motion of the spur-wheel, assisted or guided by the tramway, rolls around the end pin, such lateral movement being permitted by the lateral movement of the worm-gear carriage, and then reverses the motion of the bed. The motion of the bed obtained by this means is very slow, very easy, and very regular.

If desired, the guideway for the spur-wheel and the friction-roller on the end of stud *c* may be dispensed with, and instead coiled springs may surround the guide-rods *d*, so as to bear against the ends of sleeves *a* of the worm-gear carriage. The pressure of these springs is so regulated as to make the point of equilibrium on a longitudinal line intersecting the centers of pins F, thus keeping the said spur-wheel in engagement with said pins and making its action the same as heretofore explained.

On the end of the drive-shaft B opposite to that on which the pulleys are placed is an eccentric-stud, on which is journaled the pitman *f*. The other end of this pitman is pivoted to the end of an arm, *f'*, on the contiguous end of rock-shaft G, which latter is journaled in suitable brackets secured to and depending from the sides of case A. Secured to this rock-shaft G just within the bearings thereof are walking-beams *g g*, which have

pivoted to the ends of each arm thereof the vertical connecting-rods *h h*. These rods *h h* are pivoted at their upper ends to adjustable bosses H on the lower ends of the vertical links I.

Links I pass vertically through suitable guides made in or secured to the sides of case A, and have secured to the top ends of each pair that are in lateral alignment with each other a brush, K. These brushes, through the medium of the rock-shaft, which is actuated through the medium of drive-shaft B, pitman *f*, and arm *f'*, receive a very rapid vibration, while the bed and work thereon pass longitudinally back and forth under them, thus distributing the black lead, which has previously been sprinkled over the matrix, thoroughly in the depressions, interstices, and crevices thereof.

While I have shown and while, in my estimation, it would be the simplest and cheapest to use the devices for actuating the brushes and reciprocating the bed conjointly, yet they could be used separately, in conjunction with other devices, for reciprocating the bed in the former instance and vibrating the brushes in the latter.

What I claim as new is—

1. In a blackleading-machine, the combination, with the drive-shaft B, pitman *f*, rock-shaft G, walking-beams *g*, the connecting-rods *h*, links I, and brushes K, of a bed, E.

2. In a blackleading-machine, the combination, with the drive-shaft B, having a worm thereon, worm-gear C, bridge *c'*, and sleeves *a a*, rods *d d*, and spur-wheel D, of the bed E, having a longitudinal central series of pins, F, projecting downward therefrom, and means for retaining said spur-wheel in engagement with pins F.

3. In a blackleading-machine, the combination, with the drive-shaft B, worm *b* thereon, worm-gear C, worm-gear carriage, as described, having a vertical stud rising therefrom, rods *d d*, and spur-wheel D, of a bed, a longitudinal central series of pins, F, projecting downward therefrom, said bed having a rib, *e*, and ledge *e'*, forming a tramway around said pins, substantially as set forth.

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