

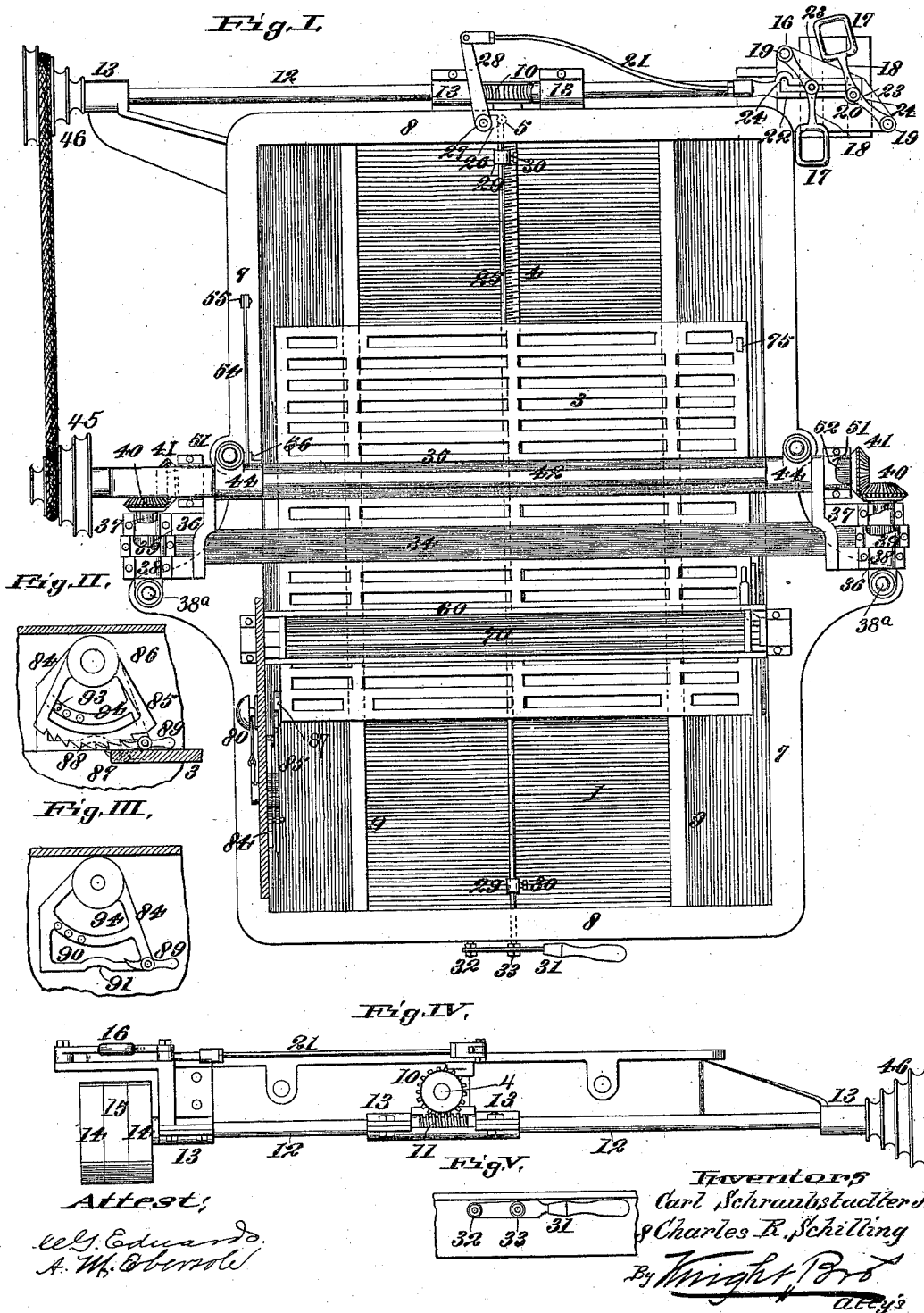
(No Model.)

2 Sheets—Sheet 1.

C. SCHRAUBSTADTER, Jr. & C. R. SCHILLING.
BLACK LEAD MACHINE.

No. 547,456.

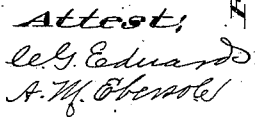
Patented Oct. 8, 1895.



2 Sheets—Sheet 2.

BLACK LEAD MACHINE.

Patented Oct. 8, 1895.



Inventors:
Carl Schraubstaedter Jr
Charles R Schilling
By Wright, Bro atty's

UNITED STATES PATENT OFFICE.

CARL SCHRAUBSTADTER, JR., AND CHARLES R. SCHILLING, OF ST. LOUIS, MISSOURI, ASSIGNORS TO THE WESTERN ENGRAVERS' SUPPLY COMPANY, OF SAME PLACE.

BLACK-LEAD MACHINE.

SPECIFICATION forming part of Letters Patent No. 547,456, dated October 8, 1895.

Application filed March 5, 1894. Serial No. 502,357. (No model.)

To all whom it may concern:

Be it known that we, CARL SCHRAUBSTADTER, Jr., and CHARLES R. SCHILLING, of the city of St. Louis, in the State of Missouri, have
5 invented a certain new and useful Improvement in Black-Lead Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 Our invention relates to an improved machine for coating with black-lead the molds of articles that are to be electrotyped, such as wood-cuts, zinc etchings, &c.; and our invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a top or plan view of our machine with all the housings except a small
20 portion removed. Fig. II is a detail view showing part of the signal. Fig. III is a similar view with the ratchet-frame or segment of the signal removed. Fig. IV is a rear elevation showing the frame of the machine, the
25 main shaft, with its pulleys, and the belt-shifter. Fig. V is a detail front view showing part of the frame and the lever for moving the belt-shifter by hand. Fig. VI is a side elevation, partly in section. Fig. VII is a vertical
30 transverse section taken on line VII VII, Fig. VI. Fig. VIII is another view of the signal or gong. Fig. IX is a detail section of the hopper and discharge-valve. Fig. X is a detail section showing the hopper and part of
35 the ratchet. Fig. XI is a detail plan view showing part of the hopper-valve and part of the ratchet. Fig. XII is a detail view showing the link or arm which connects one of the brushes to the frame of the machine. Fig.
40 XIII is a detail view of one of the eccentrics and the brush.

Referring to the drawings, 1 represents the frame of the machine, which is supported on suitable legs 2.

45 3 represents the form-carrier or table, which in the operation of the machine is moved back and forth over the frame 1 by means of a screw 4, journaled to the frame at 5, and which passes through a box 6 on the under side of

the table, (see Fig. VII,) the box having a 50 threaded union with the screw.

The frame 1 consists merely of sides 7 and ends 8, and stretching across from end to end are strips or rods 9, which support the table or form-carrier, as shown in Fig. VII. The
55 screw 4 is turned through means of a worm-wheel 10, engaged by a worm 11 on a shaft 12, journaled to the frame 1 by means of boxes 13, and which is provided at one end with a tight pulley 15 and loose pulleys 14.

60 It will be understood that the table 3 will be moved in either direction, according to the direction in which the shaft 12 is turned.

16 represents a belt-shifter, consisting of loops 17, through which the belts pass and
65 which are supported on arms 18, pivoted at 19 to a bracket 20, secured to the frame 1.

21 represents a rod having a slotted head 22, which receives pins 23 in the arms 18. At each end of the slot on the head is a notch
70 24, in which the respective pins 23 rest and are retained when the belts have been shifted. By moving the rod 21 the belts will be moved onto the different pulleys, so that the table 3 will be moved in either direction desired.
75 This is accomplished as follows: In Fig. I the parts are shown in the farthest position to the left that they ever assume. When the bar is to be shifted the outside arm 18 is moved by the slotted head on its pivot 19. It
80 will be seen that moving on this arc of a circle its pin 23 will be disengaged from the notch 24 and the pin will be moved into the longitudinal slot of the head. The continued
85 movement of the rod brings the inner end of the slot against the pin 23 of the inside arm, causing this arm to be moved to shift its belt, the outside arm having been moved to shift
its belt while the pin 23 is being disengaged from the notch 24, for as soon as the pin enters
90 the longitudinal slot of the rod the outside arm will cease to move. When the end of the slot comes against the pin 23 of the inside arm, this arm begins to move in an arc of which its pivot 19 is the center, and it is
95 necessarily drawn into the notch 24 at the inner end of the slot of the rod or bar. When the rod is shifted in the other direction, the

inside arm gradually moves out of the inner notch 24, (the arm swinging upon an arc of a circle,) and when the pin has moved out of the notch the inside arm is in the position, 5 (shown in Fig. I,) the belt having been shifted sufficiently far, and the arm now remains at rest during the continued movement of the rod 21, which shifts the outside arm when the outer end of the slot reaches the pin of the 10 outside arm.

For the purpose of automatically shifting the belts we employ a rod 25, extending from end to end of the frame, and which is connected to a crank 26 on a pin 27, journaled in 15 one end of the frame 1. On the pin 27 is also a lever 28, to which one end of the rod 21 is connected. On the rod 25, near each end, is a collar 29, held by a set-screw 30, so that it can be adjusted in or out. Just as the table 3 has 20 about reached the limit of its movement in one direction it comes against one of the collars 29 and shifts the belts through the described mechanism. The table now commences to move in the opposite direction and 25 continues to do so until it comes against the other collar 29, and then the belts are shifted again and the table commences to move back. For the purpose of permitting the belts to be shifted by hand we employ a lever 31, con- 30 nected to the frame at 32 and to the rod 25 at 33. By operating this lever the belts may be moved by hand, as will be readily understood.

As the table is moved back and forth the 35 black-lead is applied to the article supported thereon by means of brushes 34 and 35. The brush 34 is moved transversely of the machine through means of eccentrics 36, secured to shafts 37, journaled in boxes 38, secured to 40 posts 38^a on the frame of the machine. The brush is connected to the eccentric by boxes 39. On the shafts 37 are beveled gear-wheels 40, with which mesh similar wheels 41, secured to a shaft 42, journaled in boxes 44, secured to 45 posts 44^a on the frame of the machine. The shaft 42 has a pulley 45 for belt connection with a pulley 46 on the shaft 12. As the shafts 37 are turned, the brush 34 will be oscillated back and forth across the table transversely 50 of the direction in which the table moves. The brush is secured to the boxes 39 through means of arms 47, which are preferably made in two overlapping parts, as shown in Figs. VII, the parts being connected by bolts 48, 55 passing through slots in one of the parts, so that the brushes can be raised or lowered to suit the height of the table and may be lowered as they become worn away.

The brush 35 is connected by arms 50 to 60 boxes 51, the arms 50 being preferably formed in overlapping parts and connected together in the same manner and for the same purpose as the arms 47, as shown in Fig. XIII. The boxes 51 inclose eccentrics 52 on the shaft 42, 65 so that as the shaft is turned the brush will have a vertical movement imparted to it by

the eccentrics, and this movement is transmitted into a vertical and oscillating movement by connecting the brush to the frame 1 of the machine by means of an arm 54, hinged 70 to the machine at 55 and to the brush at 56. The brush 34 moving transversely of the table and the brush 35 oscillating in the direction of the movement of the table causes the black-lead to be worked into the depressions 75 and interstices of the article being treated.

60 represents a hopper located on the frame 1 and beneath which the table moves. The black-lead is placed in this hopper, either by hand or automatically, from the receptacle 61, 80 by means of buckets or scoops 62, secured by arms 63 to a shaft 64, journaled in the sides 7 of the frame. On the shaft 64 is a lever 65, (see dotted lines, Fig. VI,) which is connected by a strip 66 to the table 3. As the table 85 reaches the limit of its forward movement, it draws the lever 65 into the position shown at 65', which brings the arms 63 and bucket 62 into the position shown by dotted lines, Fig. VI, and dumps a quantity of the black-lead 90 into the hopper 60. As the table moves back, the weight of the arms and scoops causes them to move back to their normal position, and they carry the lever 65 back with them. The scoops 62 are preferably connected to the 95 arms 63 by means of eccentrically-placed hinges 67, so that as the arms move back to their normal position the scoops will slide over the black-lead and then will enter the lead when the arms commence to move forward again. 100

In the bottom of the hopper 60 is a valve 70, consisting, preferably, of a ribbed cylinder, the ribs fitting snugly in the bottom of the hopper, and the grooves formed by the 105 ribs serving to receive the lead and carry it in small quantities from the hopper and deposit it upon the article being treated. To automatically operate the valve, we employ a ratchet consisting of a wheel 71, the teeth of which are engaged by a spring-actuated pawl 110 72, fitting in a lever 73, the head of the lever being fitted onto one end of the valve, as shown in Figs. X and XI. In the outer end of the lever is a spring-actuated pin 74, 115 which, as the table moves back, engages in a recess 75 in the table and causes the lever to swing back, thus operating the valve the distance of one of its grooves and depositing the lead contained in the groove onto the article 120 being treated. As the table moves forward again, it brings the lever 73 back to its normal position ready to be operated again the next time the table recedes.

80 represents a gong, the hammer of which 125 is connected by a cord 81 to a crank 82, the gong and crank being mounted in the housing 83, which incloses the brush, table, and other parts of the machine. Inside of the housing is a fixed frame 84 and a movable 130 frame 85, mounted on the shaft or pin 86, which carries the crank 82. On the table 3

is a pawl 87, which engages teeth or notches 88 on the lower edge of the frame 85. Each time the table reaches the limit of its movement in one direction the pawl 87 comes against the teeth 88 and moves the frame 85 the distance of one tooth, until finally the slack of the cord 81 is taken up and the gong is sounded, indicating to the workmen that the article has been sufficiently treated. The backward movement of the frame is prevented by a pawl 89. (See Fig. II.) The pawl 87 laps the lower bar 90 of the frame 84, and this bar is provided with a recess 91, (see Fig. III,) which allows the point of the pawl to engage a tooth of the frame 85, and then as the table advances moves the pawl out of engagement with the tooth. The lower edge of the bar 90 is substantially on a line with the points of the teeth, so that the engagement of the pawl 87 with the teeth is controlled by the recess 91. To cause the alarm to be sounded sooner or later with respect to the movements back and forth of the table, we employ a pin 93, which fits in holes 94 in the frames 84, and against the outer end of which the frame 85 impinges, as shown in Fig. II. If the pin is in the hole shown in Fig. II, there will be less slack in the cord 81 to be taken up by the table than there should be if the pin be in one of the other holes shown, and by placing the pin in the desired hole the gong will be sounded at the proper time relatively to the movement back and forth of the table.

We claim as our invention—

1. In a black lead machine, the combination of a reciprocating table, brushes arranged over the table, and mechanism for operating the brushes, whereby one of the brushes has imparted to it a movement transverse of the direction in which the table moves, and the other a movement imparted to it in the line of the movement of the table.

2. In a black lead machine, the combination of a reciprocating table with brushes arranged over the table and means for moving the brushes, whereby one of the brushes oscillates transversely of the direction in which the table moves and the other has imparted to it a combined vertical and longitudinal movement.

3. In a machine provided with means for applying black lead, the combination of a reciprocating table, a hopper arranged over the table, shovels arranged to deposit the black lead in said hopper, and a connection between said shovels and table whereby the former are operated automatically.

4. In a machine provided with means for applying black lead, the combination of a reciprocating table, a hopper arranged over the table, a receptacle beneath the table, and

shovels arranged to transfer the black lead from the receptacle to the hopper.

5. In a machine provided with means for applying black lead, the combination of a table, a hopper arranged over the table, a receptacle beneath the table, shovels for transferring the black lead from the receptacle to the hopper, and means for operating the shovels consisting of a shaft on which the shovels are mounted, a lever secured to the shaft, and a strap connecting the lever to the table.

6. In a machine provided with means for applying black lead, the combination of a table, a hopper arranged over the table, a receptacle beneath the table, and means for transferring the black lead from the receptacle to the hopper, consisting of pivoted arms, and shovels eccentrically hinged to the arms.

7. In a black lead machine, the combination of a reciprocating table, a hopper arranged over the table, a valve located in the hopper, a lever having a pawl and ratchet connection with the valve, and a spring actuated pin in the lower end of the lever and against which the table impinges to operate the valve.

8. In a machine provided with means for applying black lead, the combination of a reciprocating table, and a signal device, consisting of a gong and mechanism interposed between the gong and the table, whereby the signal is sounded after the table has made the desired number of movements back and forth.

9. In a machine provided with means for applying black lead, the combination of a reciprocating table a pawl on said table and a signal, consisting of a gong and mechanism located between the gong and the table, consisting essentially of a fixed frame, a movable frame provided with teeth adapted to be engaged by said pawl on the table, and a lever connected with the movable frame and which is also connected with the hammer of the gong.

10. In a machine provided with means for applying black lead, the combination of a reciprocating table, a signal consisting of a gong, and mechanism located between the gong and the table, consisting essentially of a fixed frame having a bar 90 with a recess 91, and having perforations 94 to receive the pin 93, a movable frame having ratchet teeth adapted to be engaged by a pawl on the table, and a lever connected to said movable frame, and which is also connected to the hammer of the gong.

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In presence of—

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