

(No Model.)

2 Sheets—Sheet 1.

S. L. RHODES.
LAMPBLACK MACHINE.

No. 497,686.

Patented May 16, 1893.

FIG. 1.

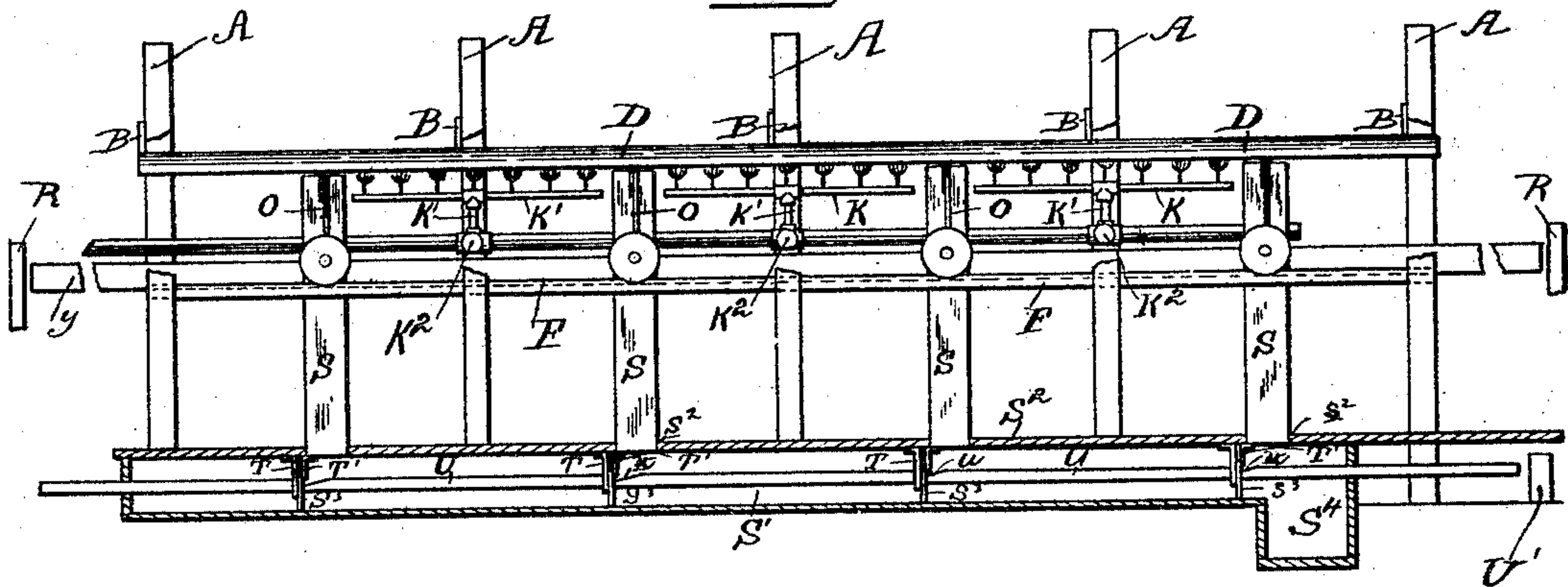


FIG. 2.

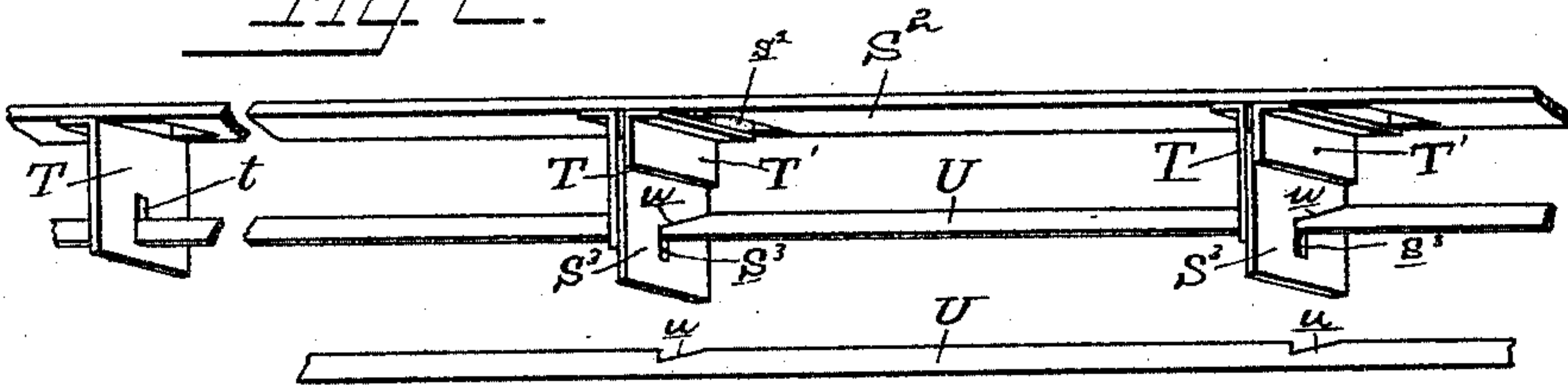


FIG. 3.

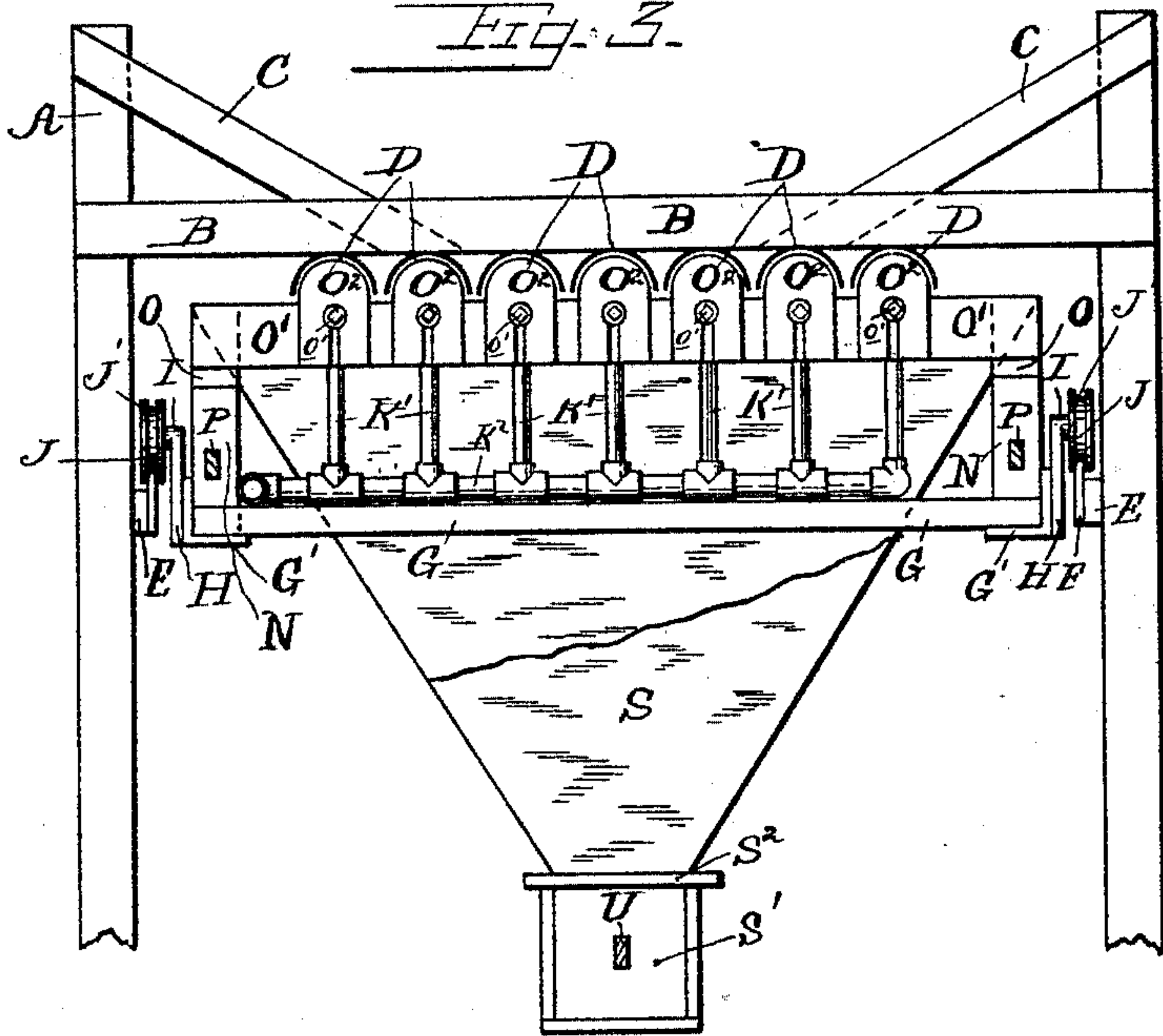
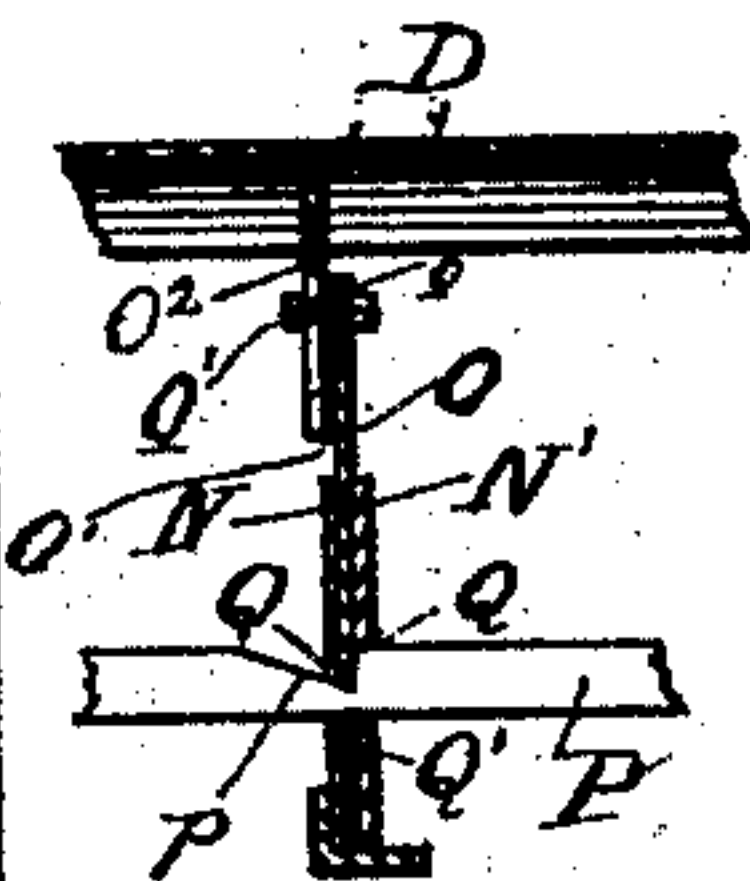


FIG. 4.



WITNESSES:

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INVENTOR

S. L. Rhodes
BY Knight Bros.
ATTORNEYS

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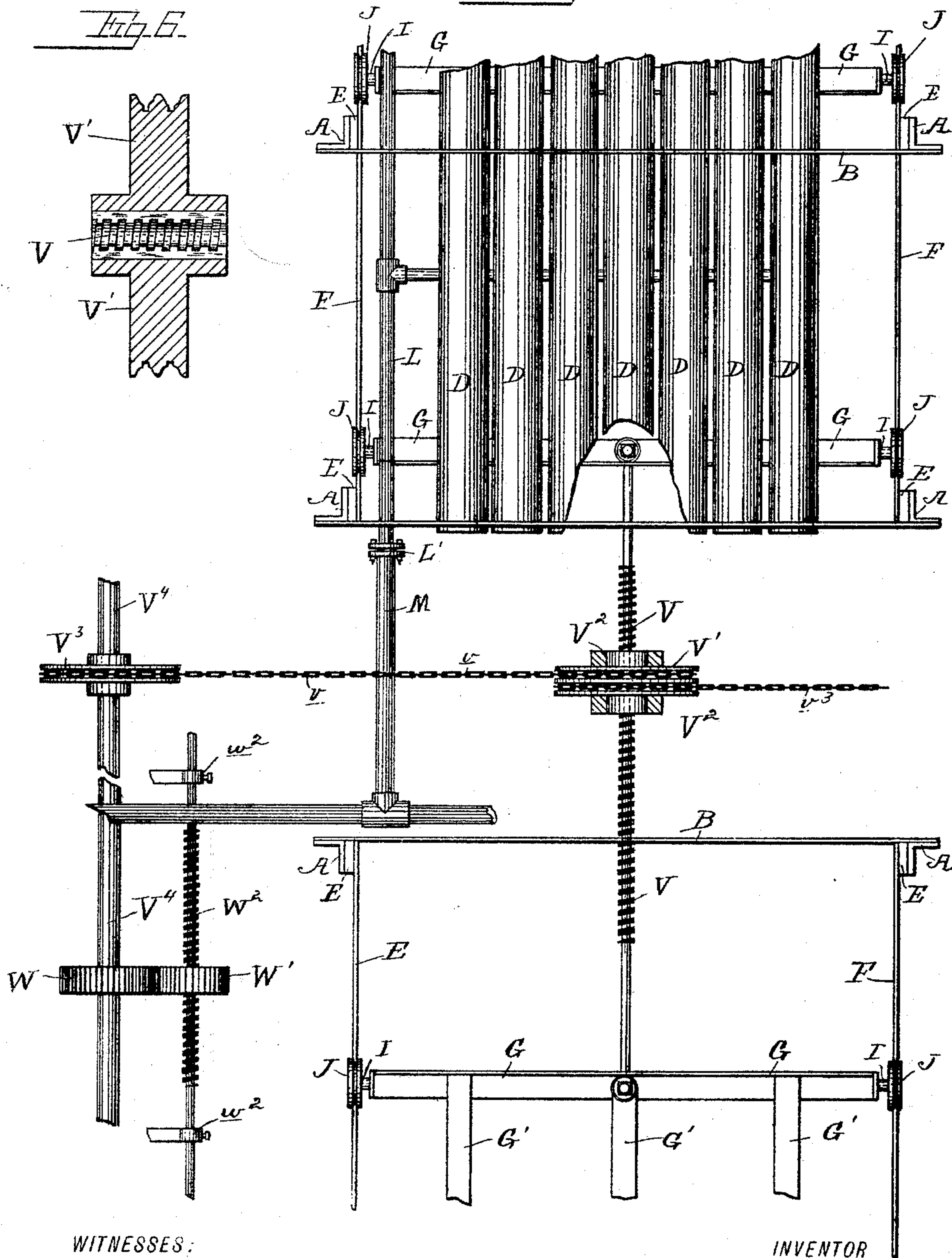
2 Sheets—Sheet 2.

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Fig. 5.



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UNITED STATES PATENT OFFICE.

SAMUEL L. RHODES, OF BRADFORD, PENNSYLVANIA.

LAMPBLACK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,686, dated May 16, 1893.

Application filed April 11, 1892. Serial No. 428,696. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. RHODES, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Lampblack - Machines; and I do hereby declare that the following specification, taken in connection with the accompanying drawings, is a full, clear, and exact description of my improvements, such as will enable those skilled in the art to make and use the same.

My invention relates to that class of machines in which lampblack is deposited from a flame upon a suitable surface provided for the purpose, and removed from the surface by suitable scrapers;—the depositing surface and scrapers being moved relatively to each other for this purpose.

My invention consists of a suitable stationary frame-work supporting the carbon deposit plates and suitable tracks or guideways, and a carriage working on said tracks or guide-ways and carrying the burners from which the lampblack is deposited, and the scrapers which remove the lampblack from the depositing surface. And I also provide an independent auxiliary hopper for each series of the traveling scrapers carried by the carriage, all of which are adapted to deposit into a central trough or main hopper in which the lampblack is collected.

My invention further consists of certain details of construction and in the manner of operating the several parts; automatically operating scraper plates being provided which will scrape in one direction only, and the carriage being moved backward and forward by means of a screw and an internally threaded pulley through which it works.

I will first describe my invention with reference to the accompanying drawings and then more particularly point out in the claims what I deem as new therein.

In said drawings:—Figure 1 is a side elevation, part being broken away and part being in section, of my improved machine. Fig. 2 is an enlarged detail perspective view of the automatic scrapers and operating mechanism for collecting the lampblack in the main trough. Fig. 3 is an enlarged end elevation of the machine, parts being broken away.

Fig. 4 is an enlarged sectional detail view of one of the scrapers and depositing plates. Fig. 5 is a top plan representation, with parts omitted and parts broken away, of two machines constructed according to my invention and operated by the same feed mechanism. Fig. 6 is an enlarged sectional view of the feed pulley.

Like letters of reference indicate the same parts throughout the several views.

The frame-work upon which my machine is built consists of the upright angle-iron posts A, the horizontal bars or beams B, and suitable braces C, all properly secured together by bolts, rivets, or otherwise, so as to form a rigid and strong frame.

D, D, &c., are a series of parallel concave plates arranged longitudinally of the machine and firmly secured to and supported beneath the horizontal bars B by any suitable means. These plates are to form the depositing surfaces for the lampblack and are arranged with their concave faces downward so that they will more readily protect the burners from drafts, and prevent the deposited lampblack from being carried away by the upward draft from the burners.

E, E, are blocks secured to the inner faces of the uprights A a suitable distance below the horizontal beams B, and F, F, are horizontal tracks or ways secured to said blocks and running longitudinally of the machine. The blocks are for the purpose of supporting the tracks away from the uprights so that the wheels or carriage supported thereon will not interfere with the uprights.

The carriage which runs on the tracks F, and supports the burners and scrapers, consists of the cross-beams G formed preferably of angle-iron, and the longitudinal bars G' running between and secured to the cross-beams, and consisting preferably of angle-iron. At the ends of each of the cross-beams G extends a vertical plate or block H having formed integral with it an outwardly projecting horizontal spindle I upon which is journaled a wheel J. The wheels J run on the tracks F and are preferably formed with central circumferential grooves J' to fit over the tracks and keep them in place and guide the carriage in its movement.

K, K, K, &c., are several series of burners

arranged longitudinally upon the carriage directly under the depositing surfaces. In the machine illustrated in the drawings I have arranged three series in line for each of the seven concave depositing surfaces, which makes twenty one sets or series of burners. Each series of burners is supported at its center by a branch coupling tube K' extending vertically from the main cross-branch pipe K^2 which leads from the longitudinal supply pipe running along on one side of the carriage. These burners and conducting tubes are carried by the carriage, and in order to supply them with the fuel to be burned for forming the lampblack, I provide a telescopic coupling L' between the supply pipe L and the main supply M . The pipe L telescopes in the coupling L' and has a gas-tight joint which allows for the longitudinal movement of the carriage. Or if preferred it is obvious that the supply pipe L could be as conveniently connected with the supply pipe M by means of a flexible conducting tube.

N and N' are a pair of narrow vertical plates or guides secured to the opposite ends of each of the cross-beams G adjacent to the wheels J . Each pair of plates N and N' are secured in position with a space between them to form a guide for a narrow vertically operating plate O , as clearly shown in Fig. 4. The vertically operating plates O are joined together in pairs by cross-bars O' so as to form scraper carrying frames, as clearly shown in Fig 3, that will move in unison.

Upon the cross-bars O' are adjustably secured a series of scrapers O^2 Q^2 which are arranged in proper relation to the concave deposit plates and have their scraping edges shaped so as to fit the concave faces of said plates. For adjustably supporting these scrapers on the cross-bar O' I provide a series of screw bolts o passing through the cross bar and having screw nuts o' , between which screw nuts and the cross-bar the scrapers are clamped. Each scraper is formed with a vertical slot through it from its center to its lower edge, which slot works on the screw-bolt, and allows the scraper to be raised or lowered on the cross-bar to regulate its contact and operation with the depositing surface. It will be observed that each scraper is independently adjustable on the cross-bar O' , and that the whole series on the cross-bar can be raised in unison, by the plates O sliding vertically in their guides on the carriage.

Now it is very desirable that the scraping action should be carried on only when the carriage is traveling forward; so that it becomes necessary to provide means for holding the scrapers in scraping contact while the carriage is moving forward and move them out of scraping contact when the carriage is returning. For this purpose I preferably employ the following means:—At each side of the carriage I provide a longitudinally extending movable bar P , provided with notches p each of which is formed with a vertical edge

wall and an inclined bottom wall for the purpose to be explained. These bars P pass through openings Q through the pair of plates N , N' and through slots Q' in the vertically moving plates O , the upper ends of said slots Q' resting on the inclined bottom walls of the notches p . As the plates N and N' are stationary on the carriage and the lower straight edge of the bar P rests and operates thereon, it will be observed that the plates O will be moved upward by the inclined notches engaging the upper edges of the slots Q' when the bars P are moved forward and that said plates will be allowed to move downward when the bars are moved back. The vertical edges of the notches p are for the purpose of limiting the backward movement of the bars.

For moving the bars P relatively to the carriage I provide stationary stops R at the opposite ends of the machine, against which the projecting ends of the bars P come in contact at the extremes of the movement of the carriage. Now it will be observed that as the carriage is moving forward to the right in the act of scraping, all of the scrapers are held to their work because the highest portion of the upper faces of the rods P are in contact with the upper ends of the slots Q' in the plates O . But at the end of its forward movement the right hand ends of the rods P come in contact with the stop R at the right hand end of the machine and shift the rods to the left until the vertical edges of the notches p come in contact with the plates O , when said plates will have receded to their lowest position in contact with the inclined notches. The machine is then in readiness for the reverse movement which is accomplished without any scraping action. At the end of the return movement the bars P are again shifted and the scrapers again moved into contact with the concave plates when the machine is in readiness for its forward movement.

S , S , &c., are a series of narrow hoppers supported from the traveling carriage and having inclined narrow walls. These hoppers each inclose one series of scrapers and lead to a common central trough S' from which the lamp black is collected. The top S^2 of this trough S' is securely attached to the lower ends of the hoppers S and is carried thereby, suitable openings s^2 being formed there-through for the passage of the lamp black.

T and T' are pairs of angle plates secured to the under side of the cover S^2 at intervals, each pair of plates forming a vertical guide in which rests a vertically adjustable scraper plate S^3 formed with an oblong perforation s^3 through it.

U is a longitudinally movable rod formed with notches u in its upper face. This rod U passes through openings t in the angle plates T and the oblong perforations s^3 in the scraper plates S^3 , said perforations s^3 resting on the notched portion of the rod.

U' are stationary stops formed at the opposite ends of the machine for the projecting ends of the rod U to come in contact with for shifting the rod from one position to the other as in the case with the bar P for controlling the main series of scrapers. By this means I am enabled to provide a series of collecting scrapers which will be down in working contact with the bottom of the trough S' when the carriage is on its forward movement, for collecting the lampblack which falls therein from the series of hoppers S. These collecting scrapers collect all of the lampblack into a suitable receptacle, such as S⁴ from which it can be removed at pleasure. Thus it will be seen that the burners, the scrapers, the auxiliary hoppers, the top of the collecting trough, and the collecting scrapers, are all carried by the carriage.

Referring to Figs. 5 and 6 I will now describe the manner of operating the carriage, and as illustrated in said figures I prefer to operate the machines in pairs. V is a screw-threaded connecting rod extending between the two carriages of a pair of machines. V' is an internally screw threaded pulley or double grooved sprocket wheel journaled on a post V² and surrounding the screw-threaded shaft V. This sprocket wheel is provided with a detachable bifurcated boxing by reason of which it can be removed when worn out and replaced without disturbing the screw-threaded connecting rod between the carriages. v is an endless chain passing from the sprocket wheel to a power sprocket wheel V³ on the power shaft V⁴. v³ is another endless chain passing from the sprocket pulley V' to the pulley of the next pair of machines in case more are employed. W is a cog-wheel mounted on the power shaft V⁴ and engaging in a cog-wheel W' having an internally screw-threaded hub through which passes a longitudinally movable screw W² provided with tappets w² which are adapted to engage any of the several known mechanical devices for reversing the engine or motor and make the carriages travel on the reverse movement when the ends of the screw V reach the drive pulley.

By my improved form of machine, I am enabled to secure durability and strength and economy in construction and power of operating.

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

1. The combination of a suitable depositing surface, a reciprocating carriage supported in proper relation to said surface, suitable burners mounted on said carriage and adapted to deposit lampblack on said surface, a fuel supply pipe, a telescoping coupling connecting the supply pipe with the pipe on the carriage which connects with the burners, and means for removing the deposit of lampblack from the depositing surface, substantially as set forth.

2. The combination of a suitable depositing surface, a reciprocating carriage supported in proper relation to said surface, a fuel supply pipe mounted on said carriage, branch pipes extending from said supply pipe, series of burners extending from said branch pipes, a main fuel supply pipe, a suitable coupling between the main fuel supply pipe and the supply on the carriage which will allow for the movement of the carriage, and suitable means for removing the lampblack deposited on said surface, substantially as and for the purpose set forth.

3. The combination of a suitable depositing surface, burners adapted to deposit lampblack on said surface, a reciprocating carriage supported in proper relation to said surface, vertically sliding adjustable scrapers mounted on said carriage and adapted to remove the lampblack from said surface, and means for automatically adjusting said scrapers into and out of working contact with the depositing surface, substantially as set forth.

4. The combination of a suitable depositing surface, burners adapted to deposit lampblack on said surface, a reciprocating carriage supported in proper relation to said surface, vertical guides on said carriage, scraper carrying frames mounted in said guides, scrapers mounted on said frames, and means for adjusting the frames, substantially as and for the purpose set forth.

5. The combination of a suitable depositing surface, burners adapted to deposit lampblack on said surface, a reciprocating carriage supported in proper relation to said surface, vertical guide plates on said carriage, vertically movable scraper-carrying frames mounted on said guide-plates, scrapers mounted on said frames, openings through said vertical guide ways, slots in said scraper-carrying frames, notched rods passing through the openings in the guide-ways and the slots in said frames, and means for moving said rods longitudinally, substantially as and for the purpose explained.

6. The combination of a suitable depositing surface burners adapted to deposit lampblack on said surface, a reciprocating carriage supported in proper relation to said surface, vertical guide plates on said carriage forming guide-ways, vertically movable scraper-supporting frames mounted in said guide ways, scrapers mounted on said frames, openings through said vertical guide plates and said scraper supporting frames, notched rods passing through said openings, obstructions against which the ends of said rods are adapted to come in contact, for moving them longitudinally and means for reciprocating said carriage, substantially as and for the purpose explained.

7. The combination of a suitable depositing surface, burners adapted to deposit lampblack on said surface, a reciprocating carriage supported in proper relation to said surface, vertical guide-plates on said carriage forming ver-

tical guide-ways, vertically movable plates supported in said guide-ways and connected in pairs by cross-bars to form scraper-supporting frames, scrapers mounted on said frames, openings formed through said vertical guide plates and the vertical plates of the scraper frames, rods passing through said openings and formed with notches having inclined bottom walls, obstructions or stops against which the ends of said rods are adapted to contact, and means for reciprocating said carriage whereby the scrapers will be held to their scraping action during the forward movement of the carriage and kept out of contact with the depositing surface on their return movement, substantially as and for the purpose explained.

8. The combination of a suitable depositing surface, burners adapted to deposit lampblack on said surface, a suitable reciprocating carriage supported in proper relation to said surface, scrapers carried by said carriage, auxiliary hoppers also carried by said carriage and adapted to receive the lampblack from the scrapers, a common collecting trough into which all of said hoppers discharge, and a cover to said trough carried at the lower end of said auxiliary hoppers and adapted to move therewith, substantially as and for the purpose set forth.

9. The combination of a suitable depositing surface, burners adapted to deposit lampblack on said surface, a suitable carriage supported in proper relation to said surface, scrapers mounted on said carriage, auxiliary hoppers also mounted on said carriage under the scrapers, a collecting trough into which all of said auxiliary hoppers discharge, a cover to said trough carried by the lower ends of said hoppers, and adapted to move therewith and collecting scrapers carried by said cover, substantially as set forth.

10. The combination of a suitable depositing surface, burners adapted to deposit lampblack thereon, a suitable carriage supported in proper relation to said surface, scrapers mounted on said carriage, auxiliary hoppers carried by said carriage adjacent to the scrapers, a collecting trough into which all of said hoppers discharge, a cover to said collecting trough carried by said hoppers, guide plates mounted on the under side of said cover, col-

lecting scrapers supported between said guide plates, openings through said guide plates and scrapers, a notched rod passing through said openings, and means for changing the position of the notched rod substantially as and for the purpose set forth.

11. A scraping or collecting mechanism for lampblack or other similar machines, consisting of a suitable movable supporting frame, guides mounted on said frame, adjustable scraper plates supported in said guides, openings through said guides and scraper plates, a rod passing through said openings and formed with a plane lower edge and a notched upper edge, the notches being formed with inclined faces, which support the scraper plates, means for moving the supporting frame, and means for shifting the rod, substantially as set forth.

12. The combination of a suitable frame-work depositing surfaces supported from said frame-work, burners adapted to deposit on said surfaces, carriages mounted on suitable ways on said frame-work in proper relation to said surfaces and carrying scrapers, a screw-threaded rod connecting the carriages an internally screw threaded pulley through which said screw-threaded rod passes, means for supporting said pulley against endwise movement and means for rotating the pulley for reciprocating the carriages, substantially as set forth.

13. The combination of a suitable depositing surface, burners adapted to deposit lampblack thereon, a reciprocating carriage supported in proper relation to said surface and carrying scrapers, a feed screw attached to said carriage for operating it, an internally screw-threaded feed pulley adapted to move said screw longitudinally, a power shaft, a pulley on said shaft geared to the feed pulley, a cog-gear also on said power shaft, an auxiliary screw, an auxiliary internally screw-threaded cog gear mounted on said screw and gearing with the cog gear on the power shaft, and tappets on said screw adapted to reverse the engine or motor, substantially as and for the purpose explained.

SAMUEL L. RHODES.

Witnesses:

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BEN R. HAGAN.