

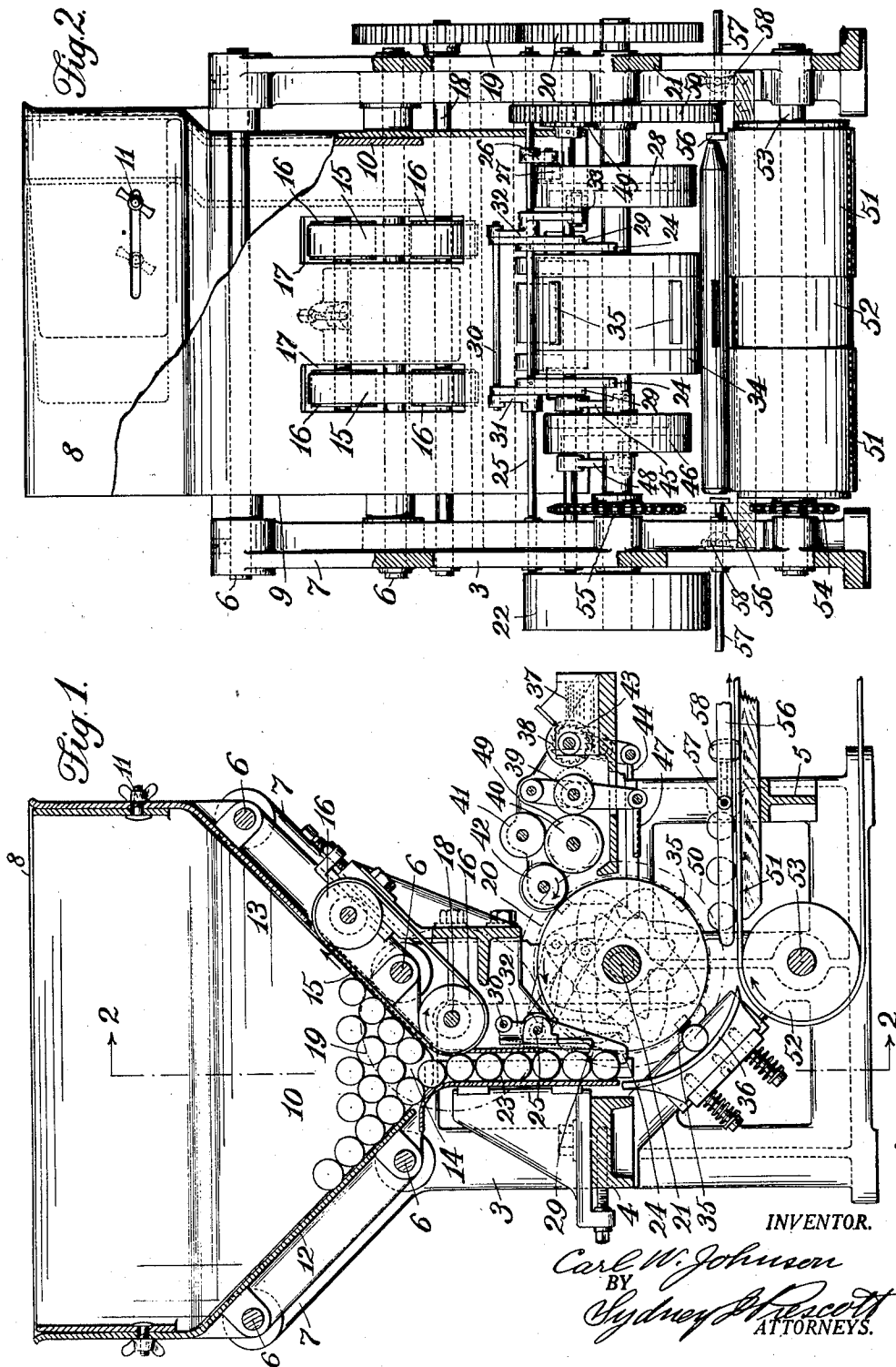
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MACHINE FOR PRINTING ARC LAMP CARBONS

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MACHINE FOR PRINTING ARC-LAMP CARBONS.

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This invention relates to a machine for printing arc-lamp carbons and similarly shaped articles having a smooth surface capable of retaining ink impressions.

5 After an arc-lamp carbon has been roughly formed, it is ground to a predetermined size, and when so ground it presents a suitable surface to receive ink impressions. Heretofore, in the manufacture of such carbons, it has been customary to imprint upon the smooth surface of the article the maker's name or trade-mark, or both. This printing of the carbons has been heretofore accomplished by a manual stamping operation similar to rubber stamping. Printing in this way is slow and is otherwise objectionable for the reason among others, that by a manual operation the imprint is not always correctly placed on the surface of the carbon. 10 The main object of the present invention is the production of a machine for the printing of arc-lamp carbons having a capacity many times as great as that of a manual operator and doing better work. A further object of the invention is the production of such a machine which is simple in construction, inexpensive to build and maintain, and with high capacity and efficiency. With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described and then specifically set forth in the claims hereunto appended. 15

20 In the accompanying drawings, which form a part of this specification and in which like characters of reference indicate the same or like parts, Fig. 1 is a sectional elevation, viewed from the front of a machine constructed in accordance with the invention; and Fig. 2 is a sectional elevation taken on the line 2—2 in Fig. 1, but with certain parts omitted in the interest of clarity of illustration. 25

30 In carrying the invention into effect, there is provided a device for supporting a plurality of carbons to be printed, mechanism for arranging said carbons in a row, and means for successively printing and ejecting the carbons so arranged. In the best constructions the carbon supporting device includes a hopper having an adjustable end wall against which the carbons are aligned, the purpose of the adjustment being 35

to provide for carbons of different lengths which may be printed in the machine; the hopper has an open end through which the carbons are loaded endwise thereinto, thus avoiding the danger of breakage were the carbons to be dumped into the hopper through its top; the hopper has a carbon delivery throat in its bottom coacting with a chute which forms a part of the mechanism for arranging the carbons in a row. In the best constructions also, the mechanism for arranging the carbons in a row includes means for agitating the carbons in the supporting device to prevent bridging of two carbons across the delivery throat of said device; a chute receiving carbons from the supporting device by the action of gravity; means for temporarily holding the row of carbons in the chute; and means for successively releasing carbons from said chute at regular intervals, so that they may pass directly to the printing and ejecting means. In the best constructions also, said printing and ejecting means includes a drum having printing means on its perimeter, an arcuate surface concentric with said perimeter and coacting therewith to roll a carbon therebetween immediately after it is released from the chute of the arranging mechanism; the drum has a plurality of printing pads on its perimeter so that high production speed may be obtained from low machine speed; means are provided for rotating the drum and for supplying ink to the printing means; and ejecting belts are provided for carrying the printed carbons out of the machine. The foregoing parts may be widely varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible concrete embodiments of the same, and the invention therefore is not to be restricted to the precise details of the structure shown and described. 40 45 50 55 60 65 70 75 80 85 90 95 100 105

Referring to the drawings, 3 indicates side frames which serve to support the various parts of the machine. These side frames are connected by transverse members 4 and 5 and by bars 6. The upper part of each side frame 3 is forked to form sloping arms 7 through which the bars 6 pass and to which they are rigidly held.

The bars 6 support a hopper generally indicated by the reference character 8,

which is open at one end to permit the loading of carbons endwise thereinto. Opposite the open end of the hopper which is indicated by the reference character 9, the hopper is provided with an adjustable end wall 10 slidable toward and away from the open end 9 and held in adjusted position by means of thumb screws 11 of well known construction and operation. When the carbons are loaded into the hopper, their leading ends abut the adjustable end wall 10 and the adjusted position of this wall determines the position of the imprint to be made on the carbons with respect to their leading ends, so that, regardless of the length of the carbon, the imprint will always be a definite distance from its leading or free end. The hopper 8 also has sloping bottom sections 12 and 13 converging below the center of the hopper and there forming a delivery throat 14 for the carbons.

Normally the carbons are caused by gravity to pass downwardly through the delivery throat 14 to mechanism for arranging them in a row. This delivery throat, however, is not wide enough to permit two carbons to pass therethrough at the same time and to prevent the bridging of the throat by two carbons across the same, thereby holding back the whole mass of carbons, the arranging mechanism includes means for agitating the carbons in the hopper. With this end in view, there is provided two belts 15—15 running over pulleys 16 located just below the sloping bottom 13 of the hopper. The operating run of these belts projects through slots 17 cut in the sloping bottom section 13, so that it will engage several carbons at the delivery throat and along the bottom section 13. These belts operate continuously in the direction of the arrow in Fig. 1. To drive them, the lowermost pulleys 16—16 are fast on a shaft 18 which is driven by a gear 19 fast thereon and in mesh with and driven by a gear 20 which is fast on a shaft 21 journaled in suitable bearings in the side frame 3 and rotated by means of a pulley 22 fast on the end of the shaft 21 opposite the gear 20. The pulley 22 is operated in a well known manner by means of a belt, not shown. The moving belts 15 have a tendency to move a part of the carbons in the hopper adjacent its delivery throat 14 away from said throat. The weight of the mass of the carbons in the hopper resists this movement. The resultant of the two opposing forces is agitation of the carbons in the hopper adjacent the delivery throat, so that the carbons in the hopper which actually pass out through the delivery throat are those at the time lying against the sloping bottom 12 of the hopper.

The mechanism for arranging the carbons in a row further includes a chute 23 im-

mediately below the delivery throat 14 and receiving carbons through said throat from the hopper. By the passage of the carbons through the chute 23 they are arranged in a row in order that they may be successively printed and ejected from the machine. The printing, however, occurs only at intervals so that it is necessary to automatically hold a row of carbons in the chute 23 until the proper time arrives for releasing them one at a time. With this end in view, there is provided a primary detent consisting of two fingers 24 fast on a small shaft 25 extending across the machine and carrying a cam arm 26 which in turn carries a cam bowl 27 tracking in a suitable groove in the outer face of a cam 28 which is fast on the shaft 21 before referred to. By means of the structure just described, the fingers 24 are moved in and out of the chute 23 at its lowermost end at regular intervals.

When the lowermost carbon in the chute 23 is released to be printed, the remaining carbons in the chute must be held therein and to accomplish this there is provided a secondary detent including two fingers 29, these fingers being loosely mounted on the shaft 25 and connected beyond the same to a bar 30, one end of which is carried by an arm 31 loose on the shaft 25, the other end of the same being carried on one arm of a cam lever 32 also loose on the shaft 25 and carrying a cam bowl 33 tracking in a suitable groove on the inner face of the cam 28 before referred to. Two grooves in the cam 28 are so related that when the lowermost carbon in the chute 23 is to be released to be printed, the secondary detent is moved into the chute to engage the second carbon from the bottom. Then the primary detent 24 moves out of the chute, releasing the lowermost carbon. As soon as this lowermost carbon has passed beyond the primary detent 24, the latter again moves into the chute, and the secondary detent 29 moves out of the chute. When this occurs, the whole column or row of carbons in the chute drops until arrested by the primary detent 24 and another carbon enters the top of the chute.

After the carbons have been arranged in a row, and as they are released from the chute 23, they are printed without stopping them as they pass on out of the machine. To effect this printing, there is provided a drum 34 which is fast on the shaft 21 and which carries on its perimeter four printing pads 35 spaced 90 degrees apart. The drum 34 is rotated continuously by the shaft 21 and printing occurs four times during each of its revolutions. Concentric with the perimeter of the drum 34 are two arcuate members 36, yieldingly supported by the side frames 3 in a well known manner

and located one on either side of the printing pads 35 so that that part of the carbon which contacts with the printing pad does not contact with these arcuate members.

Smearing of the imprint is thus avoided as the carbon is rolled between the perimeter of the drum 34 and the arcuate member 36 in its travel from the lower end of the chute 23. As the carbon is rolled, it comes into contact with one of the printing pads 35, and this impresses the imprint upon the carbon which then rolls on.

Means are provided for supplying ink to the pads 35. This means includes well known instrumentalities, such for example as an ink fountain 37, a feeding roll 38, a transferring roll 39, a receiving roll 40, a distributing roll 41 and an inking roll 42, the latter of which contacts directly with the printing pads 35 as the latter pass it. The feeding roll 38, as usual, is operated by means of a ratchet mechanism 43 operated by means of a connecting rod 44 and cam-actuated lever 45, the actuating cam being marked 46. Similarly, the transferring roll 39 is operated by means of a connecting rod 47 and cam-actuated lever 48. The construction and operation of this ink supplying means being well known, a more detailed description of the same is believed to be unnecessary to a full understanding of the present invention, and is therefore omitted in the interest of brevity. It may be stated, however, that the receiving roll 40 is driven by means of a pinion 49 fast on its shaft and in mesh with a driving gear 50 which is fast on the shaft 21.

The printing and ejecting means further includes a pair of belts 51 running over a pulley 52 fast on a shaft 53 journaled in suitable bearings in the side frames 3 and driven by a chain overrunning a sprocket 54 on the shaft 53 and a sprocket 55 on the shaft 21. The belts 51—51 also run over suitable idle pulleys not shown. As a printed carbon rolls out from between the perimeter of the drum 34 and the arcuate member 36, it rolls on these two belts which are separated a sufficient distance to avoid smearing the imprint on the carbon. To avoid displacement endwise of the carbons on the belts 51—51, guide rails 56—56 are provided. These guide rails may be moved toward and away from the middle of the machine by means of stems 57 upon which they are mounted, the stems being held in adjusted position by means of thumb screws 58. The surface speed of the belts 51—51 is such that the printed carbons are deposited thereon at spaced intervals so that the succeeding carbons will not touch each other to possibly smear the imprint until the ink has had time to dry.

In view of the foregoing, a detailed description of the operation of the device is

deemed to be unnecessary and is therefore omitted in the interest of brevity.

What is claimed is:

1. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it.

2. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said device including a hopper having an adjustable end wall against which the carbons are aligned.

3. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said device including a hopper having an open end through which carbons are loaded thereinto.

4. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said device including a hopper having a carbon delivery throat in its bottom.

5. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said device including a hopper having two sloping bottom sections converging below the centre of said hopper and there forming a delivery throat for the carbons.

6. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said device including a hopper having an adjustable end wall, an open end, and a carbon delivery throat in its bottom.

7. A machine for printing arc-lamp carbons, comprising a device for supporting a

plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including means for agitating the carbons in said device.

8. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including continuously moving means for agitating the carbons in said device.

9. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including continuously moving belts the operating runs of which act upon carbons within said device to agitate the same.

10. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said device including a hopper having a carbon delivery throat in its bottom, and said mechanism including continuously moving belts operative at said throat and along said bottom to agitate the carbons in said device.

11. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including a chute receiving carbons from said device.

12. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including a chute receiving carbons from said device, and means for temporarily holding a row of carbons in said chute.

13. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging

said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including a chute receiving carbons from said device, and means for successively releasing carbons from said chute.

14. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including a chute receiving carbons from said device, means for temporarily holding a row of carbons in said chute, and means for successively releasing carbons from said chute at regular intervals.

15. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including a chute receiving carbons from said device, a detent for temporarily holding a row of carbons in said chute, and means for moving said detent in and out of said chute.

16. A machine for printing arc-lamp carbons comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including a chute receiving carbons from said device, a detent for temporarily holding a row of carbons in said chute, and cam-actuated means for moving said detent in and out of said chute.

17. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including a chute receiving carbons from said device, a detent for holding carbons in said chute while the leading carbon is being removed therefrom, and means for moving said detent in and out of said chute.

18. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separat-

ing it from said row and in so doing printing and ejecting it, said mechanism including a chute receiving carbons from said device, a detent for holding carbons in said chute while the leading carbon is being removed therefrom, and cam-actuated means for moving said detent in and out of said chute.

19. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including a chute receiving carbons from said device, a primary detent for temporarily holding a row of carbons in said chute, a secondary detent for holding carbons in said chute while the leading carbon is being removed therefrom, and means for alternately moving said detents in and out of said chute.

20. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said mechanism including a chute receiving carbons from said device, a primary detent for temporarily holding a row of carbons in said chute, a secondary detent for holding carbons in said chute while the leading carbon is being removed therefrom, and cam-actuated means for alternately moving said detents in and out of said chute.

21. A machine for printing arc-lamp carbons comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said means including a drum having printing means on its perimeter, an arcuate surface concentric with said perimeter and coacting therewith to roll a carbon therebetween, and means for rotating said drum.

22. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said means including a drum having printing means on its perimeter, a yielding arcuate surface concentric with said perimeter and coacting therewith to roll a carbon therebetween, and means for rotating said drum.

23. A machine for printing arc-lamp carbons, comprising a device for supporting a

plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said means including a drum having a plurality of printing pads on its perimeter, an arcuate surface concentric with said perimeter and coacting therewith to roll a carbon therebetween, and means for rotating said drum.

24. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said means including a drum having printing means on its perimeter, an arcuate surface concentric with said perimeter and coacting therewith to roll a carbon therebetween, means for rotating said drum, and means for supplying ink to said printing means.

25. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said means including ejecting belts, and belt moving means.

26. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said means including ejecting belts, and means for continuously moving said belts.

27. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means including a printing drum directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said means including ejecting belts, belt moving means, and guide rails alongside said belts.

28. A machine for printing arc-lamp carbons, comprising a device for supporting a plurality of carbons, mechanism for arranging said carbons in a row, and means directly engaging the leading carbon in the row, separating it from said row and in so doing printing and ejecting it, said device including a hopper having an adjustable end wall, an open end, and a carbon delivery throat in its bottom, said mechanism including means for agitating the carbons in said

device, a chute receiving carbons from said device through said throat, means for temporarily holding a row of carbons in said chute, means for successively releasing carbons from said chute, and said printing and ejecting means including a drum having printing means on its perimeter, an arcuate surface concentric with said perimeter and coating therewith to roll a carbon therebetween, means for rotating said drum, ejecting belts, and belt moving means.

In testimony whereof, I have signed my name to this specification.

CARL W. JOHNSON.