No. 672,209.

Patented Apr. 16, 1901.

J. B. EBERLING.

ASSORTING MACHINE.

(No Model.)

(Application filed Jan. 23, 1899.)

4 Sheets—Sheet 1.

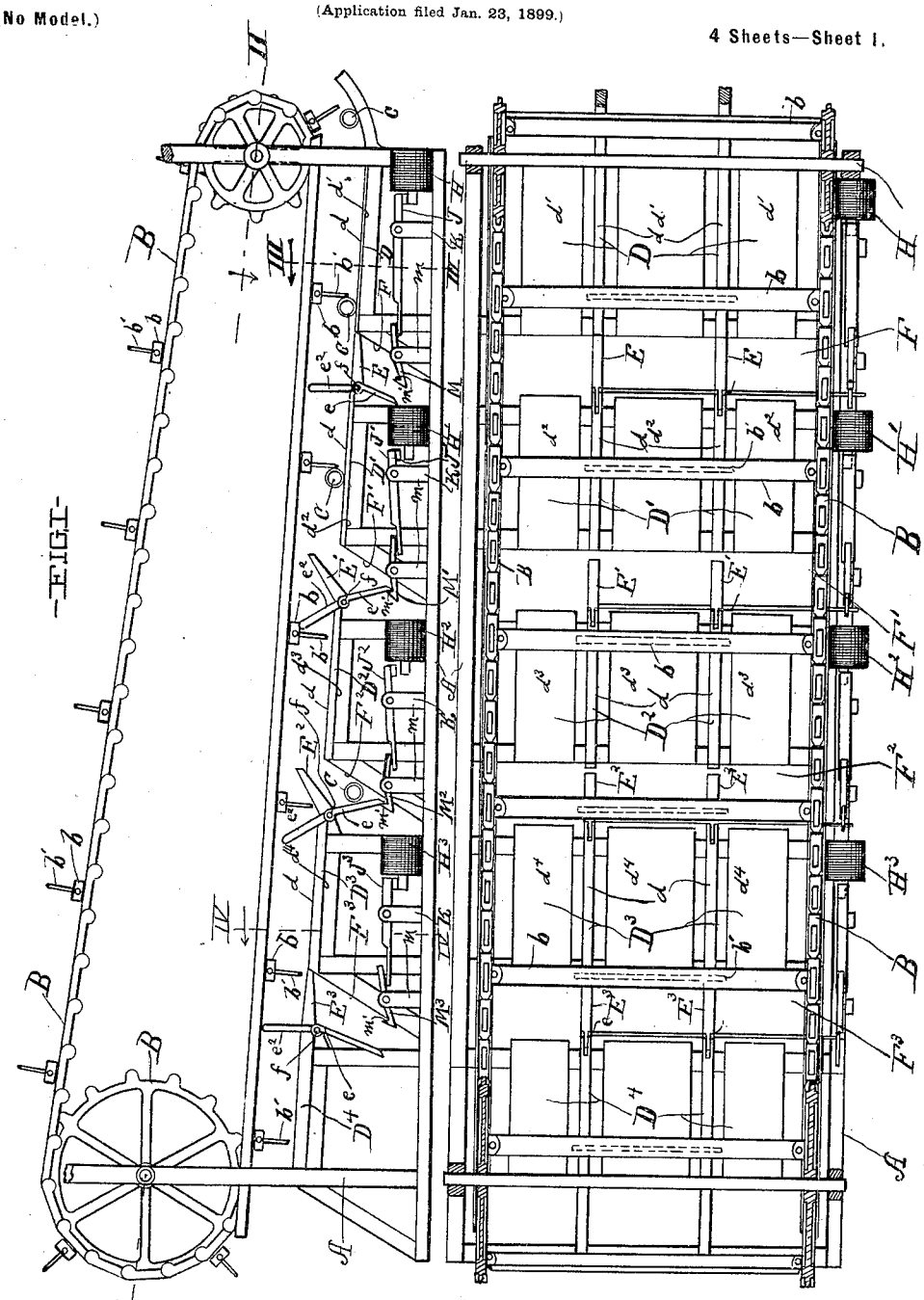


FIG. 1.

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FIG. III.

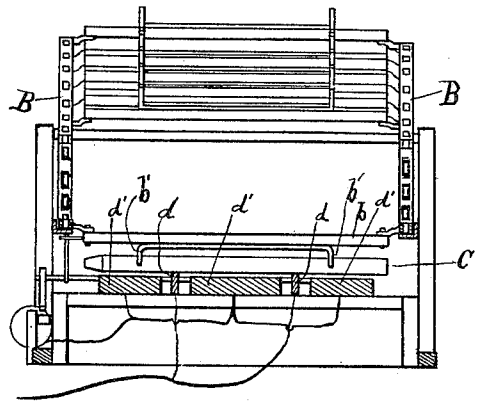
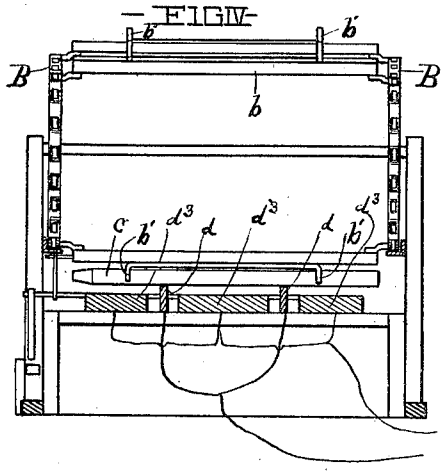


FIG. IV.



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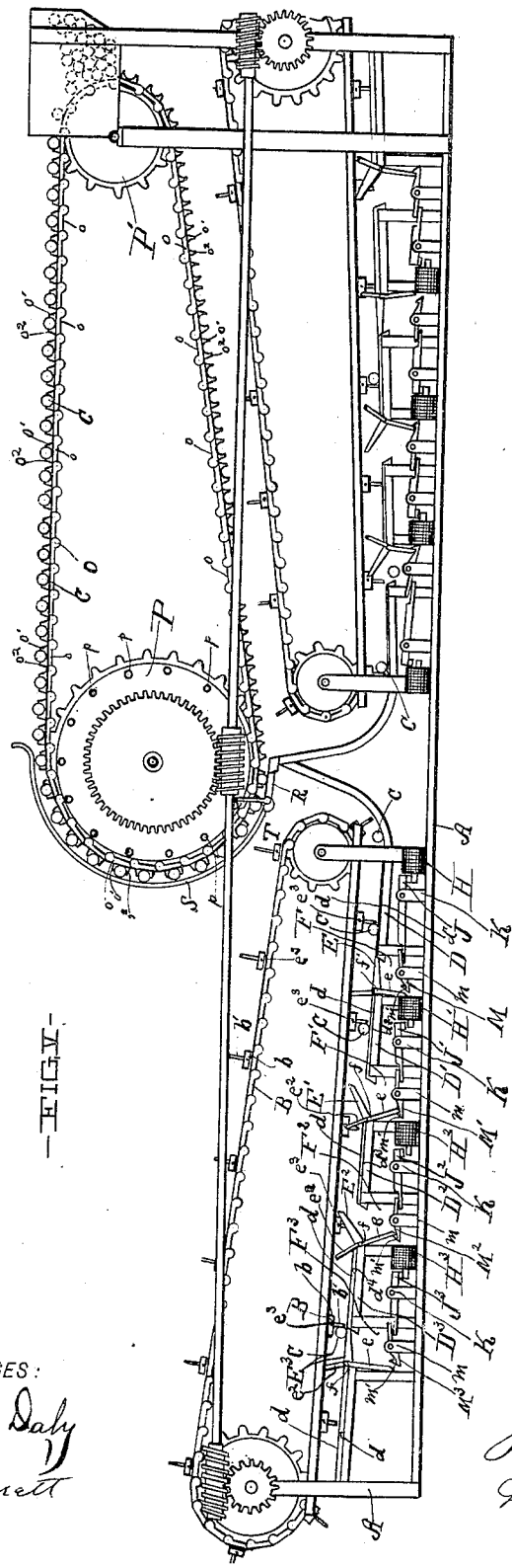
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ASSORTING MACHINE.

(No Model.)

(Application filed Jan. 23, 1899.)

4 Sheets—Sheet 3.



—FIG. 4—

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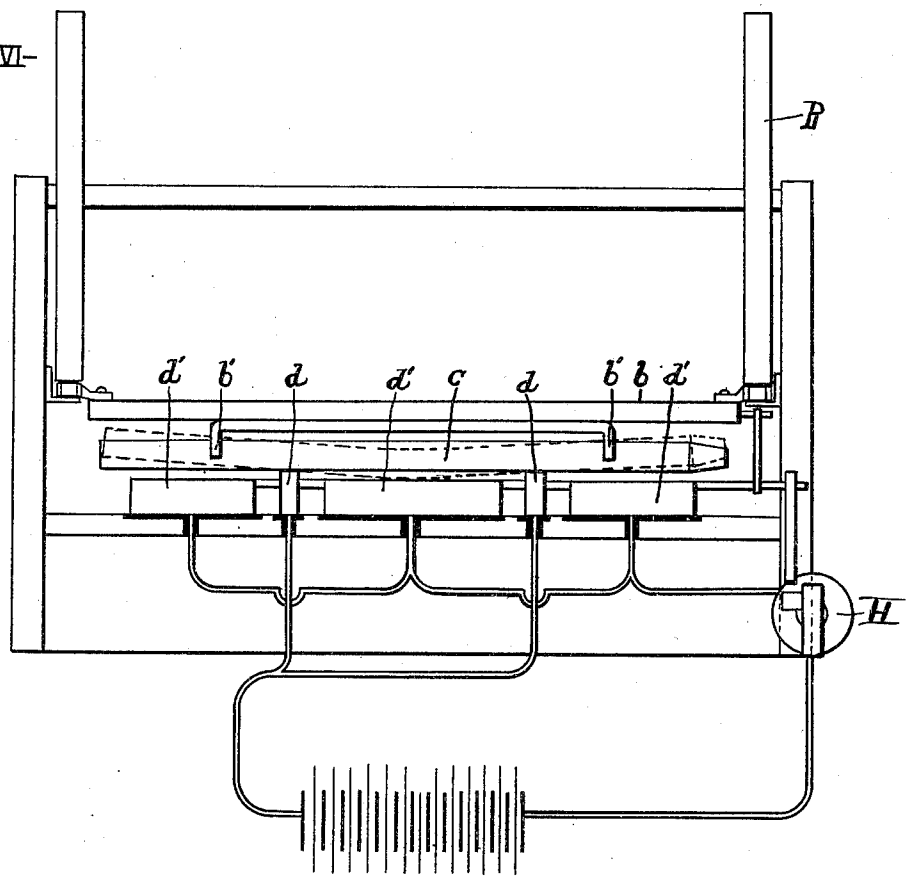
J. B. EBERLING.

ASSORTING MACHINE.

(Application filed Jan. 23, 1899.)

(No Model.) 4 Sheets—Sheet 4.

FIG. VI.



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UNITED STATES PATENT OFFICE.

JACOB B. EBERLING, OF CLEVELAND, OHIO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE NATIONAL CARBON COMPANY, OF SAME PLACE.

ASSORTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,209, dated April 16, 1901.

Application filed January 23, 1899. Serial No. 703,103. (No model.)

To all whom it may concern:

Be it known that I, JACOB B. EBERLING, a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Assorting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to machines for assorting carbons or the like—as, for instance, such carbons as are employed in electric-arc lamps.

My invention consists in a machine of the type above indicated wherein the carbons are automatically and successively assorted according to their regularity or irregularity of outline, or, in other words, according to their straightness or crookedness, the more regular or straight carbons or articles being automatically directed to and through the first of a series of apertures, openings, or the like, and the less straight or regular articles being delivered successively to different apertures, openings, or the like, according to their increased irregularity.

More especially my invention consists in a machine of the character above indicated wherein the regularity or irregularity, or, in other words, the straightness or crookedness, of the article will predetermine their distribution by automatically opening bridges, traps, or gates predisposed along a way or track over which or along which the said carbons or the like are successively carried.

My invention further consists in the peculiar construction of said machine, whereby the carbons or articles as they are carried along the said way or track will operate (according to their regularity or irregularity) to form switches or bridges which will bring into operation electrical devices, such as electromagnets for operating certain bridges, traps, or gates, as will be hereinafter fully set forth.

My invention also consists in certain details of construction of the machine, which will be hereinafter fully set forth and claimed.

In the drawings, Figure I is a view in side elevation of a carbon-machine embodying my invention. Fig. II is a top plan of the same, taken in section on line II II, Fig. I. Fig. III is a transverse vertical section on line III III, Fig. I. Fig. IV is a transverse vertical section taken on line IV IV, Fig. I, and looking in the direction of the arrow on said figure. Fig. V is a side elevation of two carbon-assorting machines connected together, wherein the carbons are distributed or fed alternately to the different assorting-machines. Fig. VI is a diagram showing the electric circuit connecting a section of the track and an electromagnet.

In the drawings, A represents a frame of suitable construction adapted to support and form bearings for the several operative parts of my device.

B represents a feeding device which is adapted to feed the carbons or other articles successively to and through the machine. In this connection I have illustrated an endless carrier consisting of an endless sprocket-chain and suitably-driven sprocket-wheels, upon which said chain is mounted and by which it is operated. The chain or feeder B is provided (in the case illustrated) with cross-bars *b*, which are in turn provided with feeding-arms *b'*, suitably disposed, as illustrated in the drawings, so as to be equidistant apart and to successively engage and carry along the carbons or articles C. Two or more chains B, with bars *b* and carrying-arms *b'*, may be employed as desired or found necessary. I prefer to use two chains B with bars *b* straddling or bridging the same equidistant apart and each of said bars to be provided with two feeder-arms *b*, the location, construction, and operation of the same being such that the carbons or articles C are engaged at both ends and evenly carried along the way or track.

D, D', D^2, D^3, and D^4 represent sections of the track or way, which are not necessarily separated or distinct, but may as a whole constitute different portions of said way or track.

E, E', E^2, and E^3 represent bridges, traps, or gates which connect and form continuations between the different sections D, D', D^2, D^3, and D^4. The bridges, traps, or gates E,

E', E^2, and E^3 are preferably hinged, as at *f*, to the respective sections D', D^2, D^3, and D^4. The bridges or gates E, E', E^2, and E^3 are normally held open, so that the carbons or articles C as they are carried along by the carrier B will be carried toward the openings and be deposited or fall into the respective divisions F, F', F^2, or F^3, according to their regularity or irregularity or straightness or crookedness, and hence it will be seen that in order to properly operate the several bridges, traps, or gates E, E', E^2, and E^3 the carbons or articles as they are carried along the track or way must predetermine their disposition according to their outline, (straightness or crookedness or irregularity,) and in order to accomplish this I have provided the following details of construction, which I consider as best adapted to obtain the desired results:

As illustrated in Fig. II of the drawings, the several sections D, D', D^2, D^3, and D^4 are provided with raised portions *d*, which are successively elevated above the table-plates *d'*, d^2, d^3, and d^4. The portions *d* of the way or track D, D', D^2, D^3, and D^4 are, in each of the successive sections, so constructed or secured that the raised portions *d* of each successive section are slightly more elevated from the plates *d'*, d^2, d^3, and d^4. The plates *d'*, d^2, d^3, and d^4 of each of the sections D, D', D^2, D^3, and D^4 form or are electrically connected to one pole or line of an electric circuit, and the portions *d* form or are electrically connected with the opposite poles or lines of an electric circuit, the circuit in each case being normally opened, and the portions *d*, which form the tracks for the carbons or articles C, and also the plates *d'*, d^2, d^3, and d^4 are constructed of electric conducting material and embody in their circuits (of which they form the normally-opened ends) electromagnets, such as H, H', H^2, and H^3. Each section D, D', D^2, and D^3 has its respective circuit and electromagnet, which is properly connected in a suitable manner to a source of electric supply, which may be either a battery or dynamo line-wire, as desired.

J, J', J^2, and J^3 represent pivoted armatures properly mounted in their respective bearings K and located in such juxtaposition to their respective magnets that they will be attracted thereto by the passage of an electric current through the said magnets.

M, M', M^2, and M^3 represent catches which are pivoted in their respective housings or journals *m*. One end of the catches M is formed with a nose *m'*, and the opposite end is located so as to be engaged by an armature J, J', J^2, or J^3, respectively, when either of said armatures is attracted by its respective magnet.

e represents an arm or trigger which in the device indicated is secured to the pintle or pivot-shaft of the gates, traps, or bridges in such a manner that when the free end of the same is engaged by the nose *m'* of the respective catches the gates are held opened, as illustrated in the central sections in Figs. I and V, and when the said catches release the arms or triggers *e*, respectively, the bridges, traps, or gates will close, as illustrated at the end sections in Figs. I and V, thus forming a bridge between the contiguous sections and allowing the carbons or articles C to pass from one section to the other.

It will be clearly seen that the electromagnets and their armatures operate their respective catches for closing their respective traps, gates, or bridges by releasing the catches from the arm or trigger *e* when the armature is attracted by the magnet.

The opening of the traps, bridges, or gates is accomplished through the medium of the carrier B, and for this purpose I have provided each of said gates, traps, or bridges with an arm e^2, which is engaged by a pin or projection e^3 as the carrier passes along in feeding the carbons or articles C. The construction and location of the arm *e'* are such that their relation to the projections or pins e^2 will cause them to engage pins e^2 when the gates, traps, or bridges are closed and open said gates, traps, or bridges until the arm or trigger *e* is engaged by the nose of the catches M, and they will be thus held opened until released, as hereinbefore stated.

Hereinbefore I have set forth certain details of construction which are mechanical features that I consider best adapted to properly perform conjointly their several functions and which I consider are best adapted for such purposes. I will now proceed to set forth the principal or essential part of my invention and the operation of the machine in this connection.

As hereinbefore stated, the carbons or articles C are carried along by the carrier or feeder B, and in being so carried along they are rolled or slid along the raised portions *d* of the first section. If there is any irregularity in the contour of article C—such as a kink, a crookedness, or a projection—that irregularity will come in contact with one of the plates *d'*, d^2, d^3, or d^4, thus forming an electric bridge, which closes the open circuit normally existing between the raised portions *d* and the plates *d'*, d^2, d^3, and d^4, energizing the electromagnets and in turn operate the armatures in such a way as to release the catch from the arm or trigger *e*, allowing the gate, trap, or bridge to close, as illustrated in Fig. I. However, if the carbon or article C is true or uniform, so that no part of it will project so as to bridge or close the opened ends of the circuit, the gate will remain open and the article will fall through the first opening F. The further progress of the carbon or article C, if it is slightly crooked or irregular, is to pass over the first bridge and onto the next section D' of the way or table, and inasmuch as the distance between the upper surface *d*, which

forms the track proper, and the upper surface of the plates d', d^2, d^3, and d^4 is greater in this second section than in the first section a bridge (or the closing of the opened ends of the circuit) will not be accomplished by the article unless it is extraordinarily irregular or crooked, and hence the gate E' will remain open and the carbons or articles fall into the division F'. Each subsequent carbon or article C is accordingly deposited in the respective divisions F^2 or F^3 according to their regularity or irregularity, straightness or crookedness, and hence will be distributed according to their proper grade.

In Fig. V of the drawings I have illustrated two carbon-assorting machines located in juxtaposition one with the other and in connection therewith a feeding device for alternately feeding the carbons or articles to the machine. The feeding device or distributing device, as illustrated in Fig. V of the drawings, consists, in the first place, of a hopper N, so constructed as to receive the carbons C and properly present them to an endless carrier O. The carrier O is preferably constructed of links *o*, each of which is provided with lugs o' o^2, located at such distance apart that they will catch, receive, and carry the carbons or articles C from the hopper N. The endless carrier O is mounted upon and driven by suitable sprocket-wheels P and P', which are suitably geared and driven, as illustrated in said Fig. V, so that the carbons will be properly distributed to the one or the other of the assorting-machines, or, in other words, will be distributed alternately.

In order to properly distribute the carbons or articles C alternately, as hereinabove set forth, I employ a bridge, gate, or trap R, which is hinged at the lower end of a "run" S, which is in turn concentric with the sprocket-wheel P and located at such distance from said sprocket-wheel as to allow of the free passage of the links of the carrier and also the contained carbon.

The bridge R forms a continuation of the passage or run S and is tripped by engaging pins *p*, projecting from the face of the sprocket-wheel P. Pins *p* are so distributed and located upon the face of the sprocket-wheel P that they will engage an arm or trigger T, which is connected to the bridge, gate, or trap R for the purpose of opening the same, and they are also so constructed and located that the said trap, bridge, or gate R is opened only so as to alternately feed the carbons to the machines.

What I claim is—

1. In a carbon-sorting machine, the combination of tracks connected with a pole of an electric circuit, a metallic contact-plate which is below and insulated from said tracks and is connected with the other pole of said circuit, means for rolling carbons along said tracks and a device which is caused to operate when the electric circuit is closed by the contact of a carbon on said track with said plate; substantially as described.

2. In a carbon-sorting machine, the combination of tracks connected with a pole of an electric circuit, a metallic contact-plate which is below and insulated from said track and is connected with the other pole of said circuit, and means for rolling carbons along said tracks, with an electromagnet connected in said circuit, and a switch-gate controlled by the armature of said magnet, substantially as specified.

3. In a carbon-sorting machine, the combination of tracks, connected with a pole of an electric circuit, a metallic contact-plate which is below and insulated from said tracks and is connected with the other pole of said circuit, and means for rolling carbons along said tracks, a switch-gate, a locking device for holding it in one position, an electromagnet connected in said circuit, and means operated by said magnet for releasing said locking device, substantially as specified.

4. In a carbon-sorting machine, the combination of tracks, said tracks comprising separate sections connected by traps or gates said sections being connected to one pole of an electric circuit, separate contact-plates located below each of said sections of tracks and at varying distances therefrom, said contact-plates being connected with the other pole of the said circuit, means for rolling carbons along said tracks, and an electromagnet connected in said circuit for controlling the operation of the said traps or gates, substantially as described and for the purpose set forth.

5. An assorting-machine comprising a way or track along which the carbons to be sorted are fed, said track having an opening located in the path of the said carbons, a trap-gate for closing said opening, an electromagnet for controlling the movement of said gate, a metallic contact-plate which is below and arranged at an inclination to said track, and an electric circuit for energizing said magnet, said circuit being normally open and having one of its terminals connected to the said tracks and the other terminal being connected to the said contact-plates, substantially as described and for the purpose set forth.

6. In a carbon-sorting machine, a carrying device comprising an inclined way, an endless belt located above said way and parallel thereto, said belt being provided with lugs adapted to engage with carbons lying on the said way, and means for driving said belt in the direction of the upward inclination of said way, substantially as described and for the purpose set forth.

7. A machine for assorting carbons, comprising a way or track; means for propelling the carbons to be assorted over said track; traps adapted to be operated by suitable electrical devices arranged in an electric circuit, one of the conductors of the said circuit be-

ing so located that all carbons passing over said track shall come in contact therewith, and the other conductor arranged in such proximity thereto that irregular or crooked carbons will bridge the distance between said conductors and form electrical contact therewith, thereby closing or opening the said circuit and actuating the electrical devices controlling the closing or opening of the traps for the purpose specified, substantially as set forth.

Signed by me at Cleveland, Ohio, this 5th day of December, 1898.

JACOB B. EBERLING.

Witnesses:
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A. H. PARRATT.