No. 641,545. Patented Jan. 16, 1900.

C. T. RICHMOND & M. M. ZELLERS.

BUTTING AND POINTING MACHINE.

(Application filed July 10, 1899.)

(No Model.) 3 Sheets—Sheet 1.

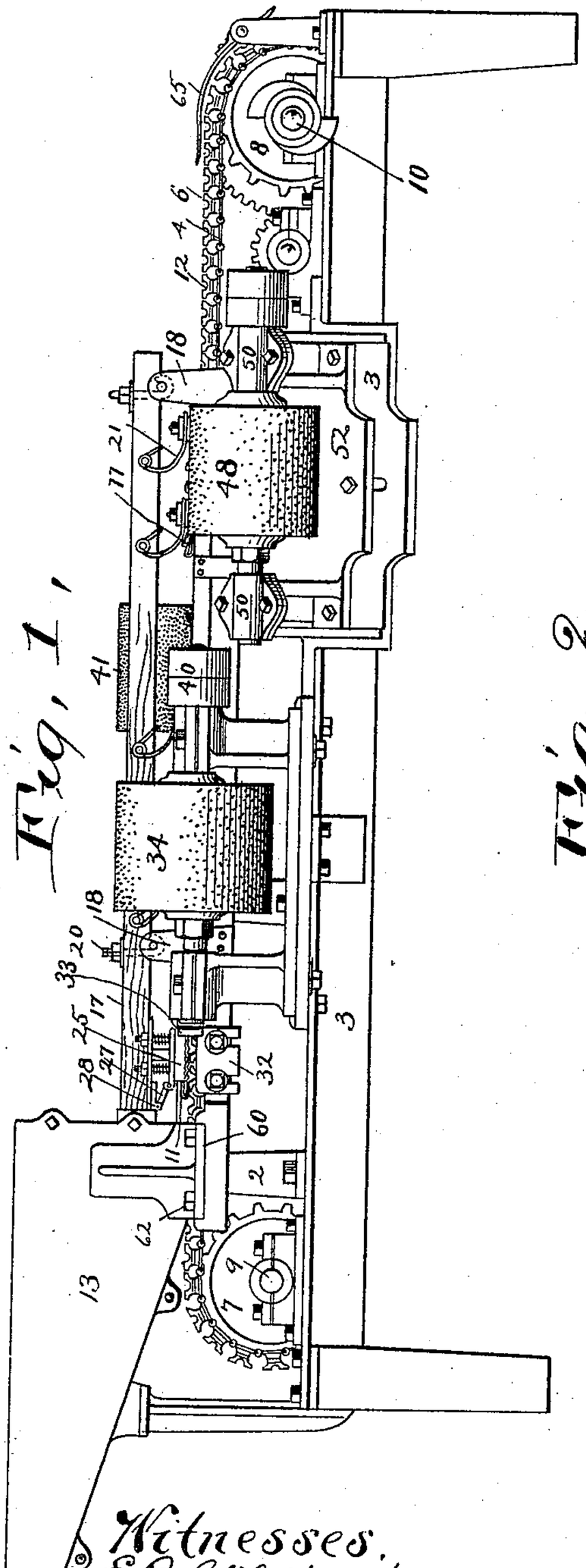

Fig. 1.

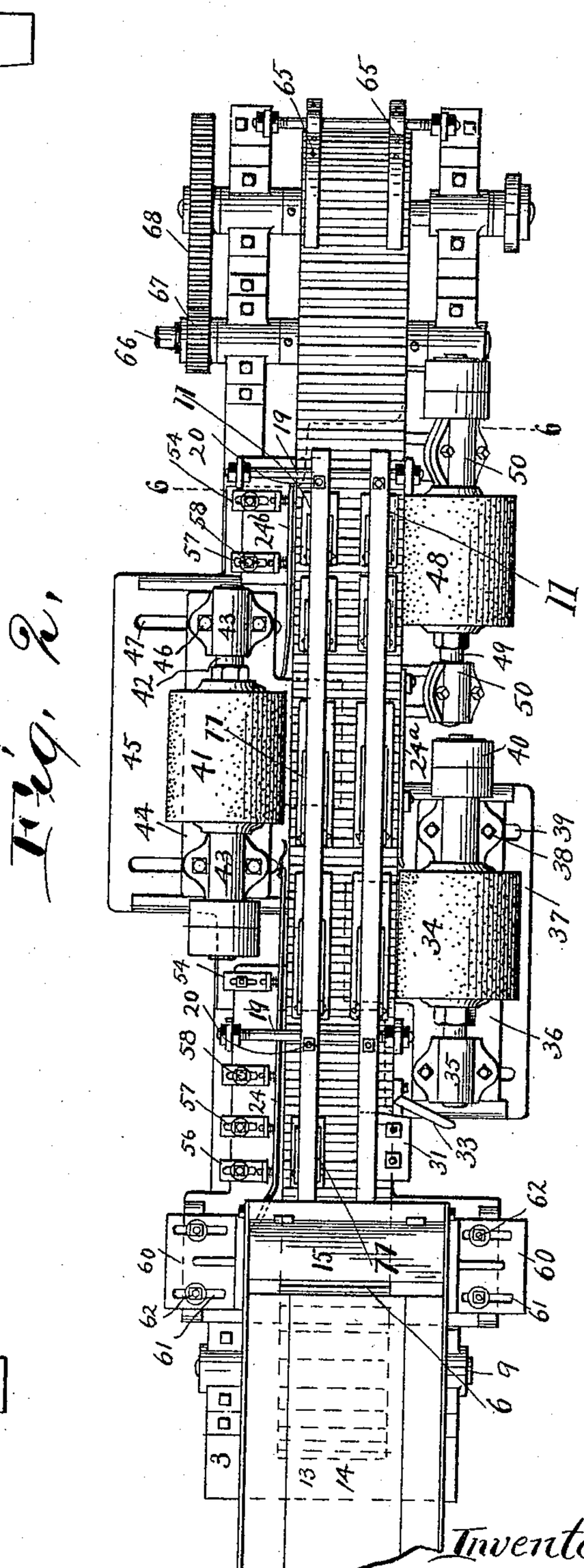

Fig. 2.

Witnesses.
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Fig. 3.

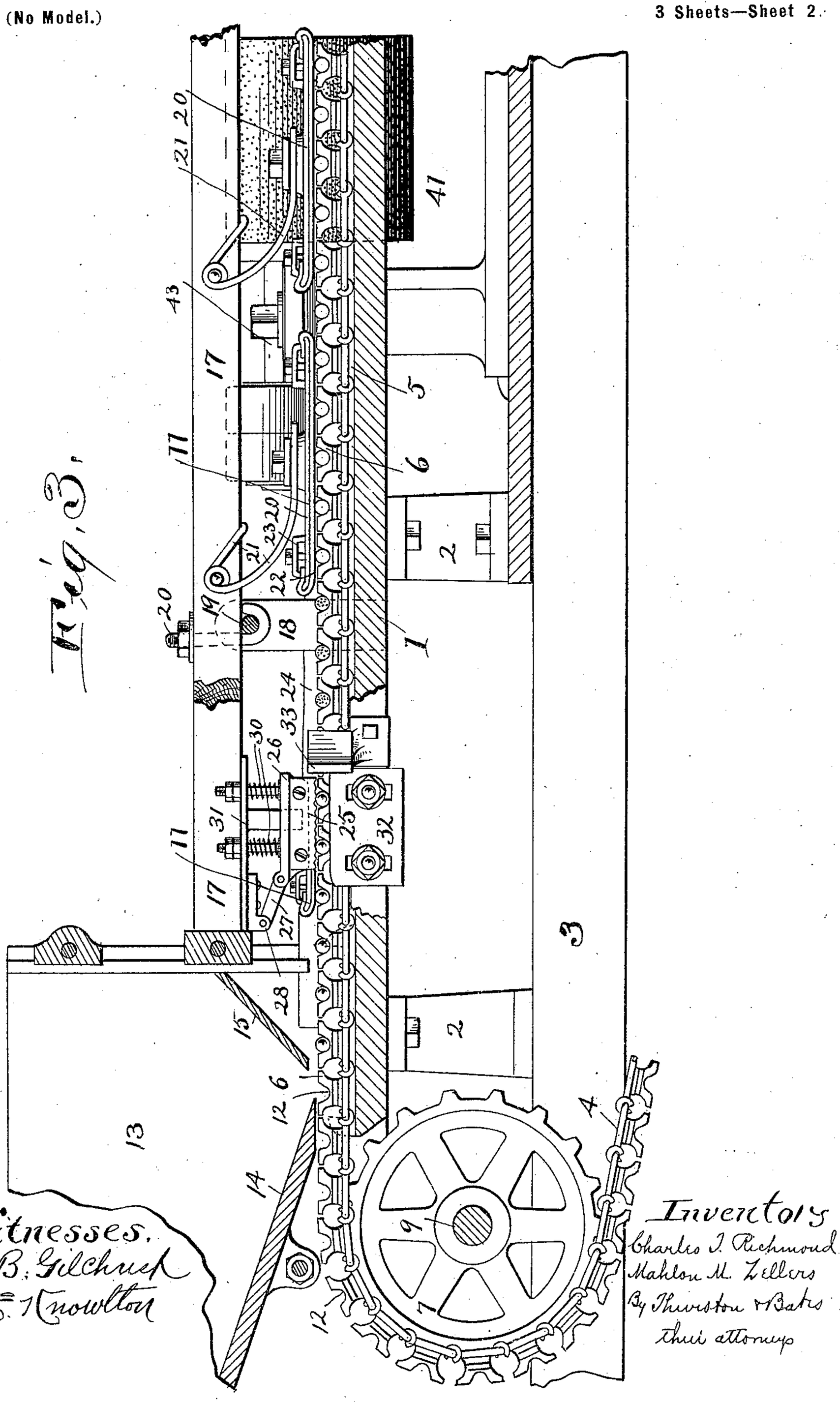

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Fig. 4.

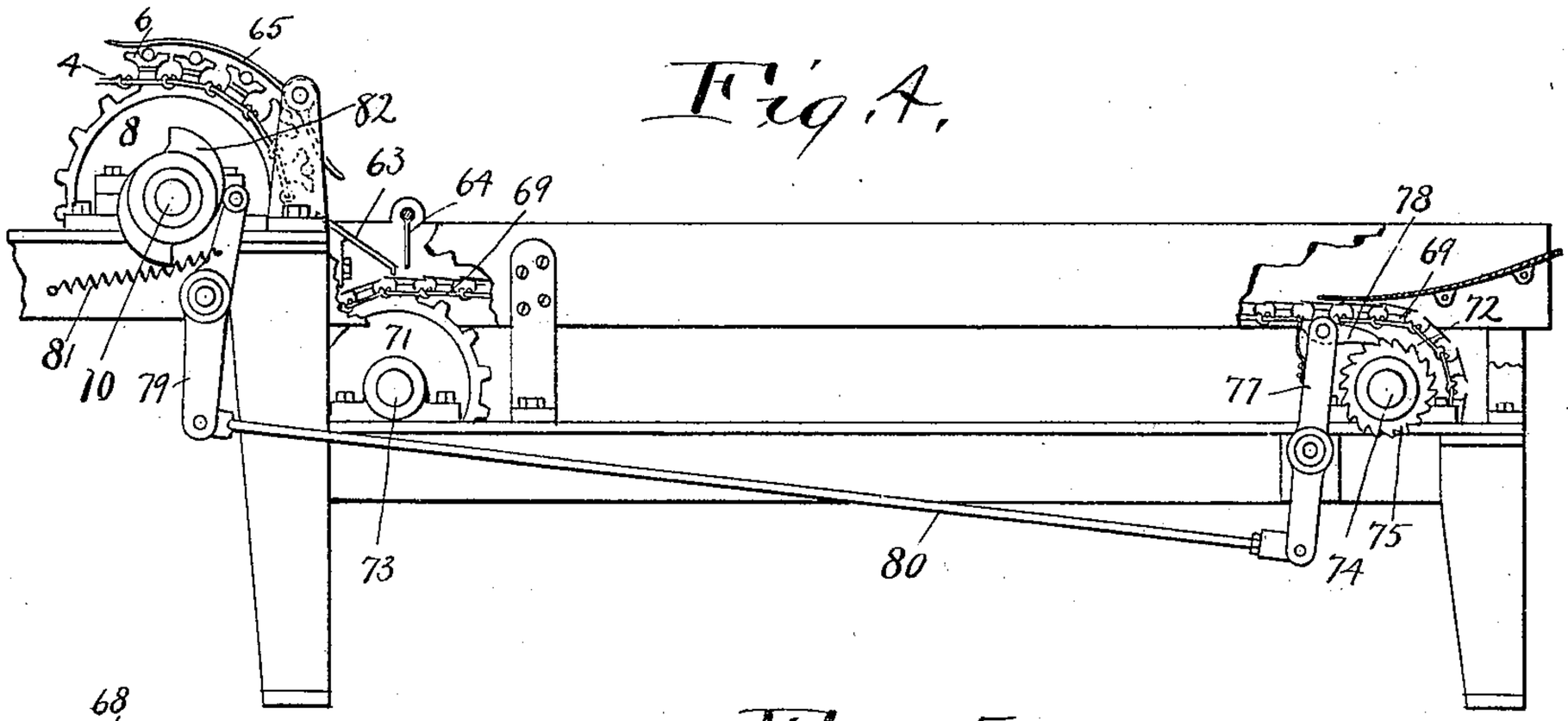

Fig. 5.

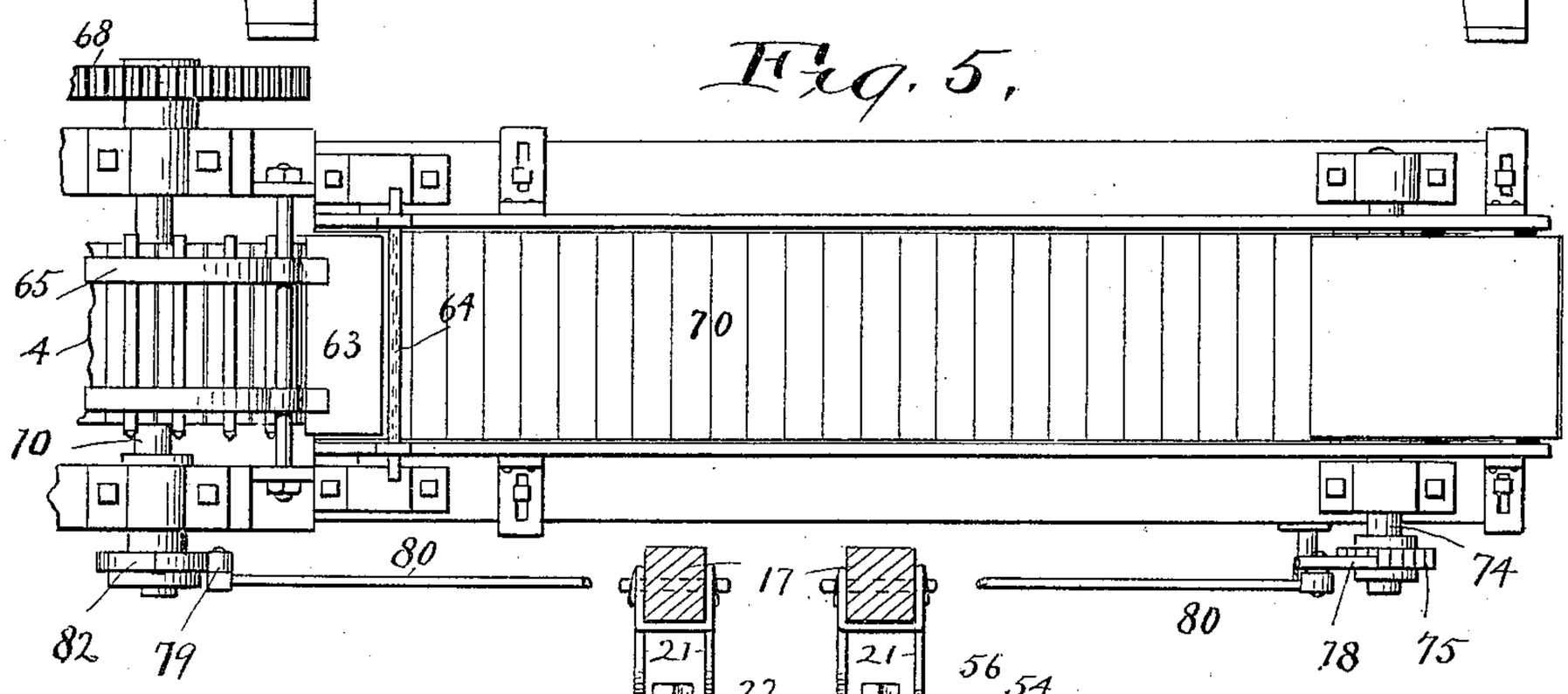

Fig. 6.

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UNITED STATES PATENT OFFICE.

CHARLES T. RICHMOND AND MAHLON M. ZELLERS, OF CLEVELAND, OHIO, ASSIGNORS TO THE NATIONAL CARBON COMPANY, OF TRENTON, NEW JERSEY.

BUTTING AND POINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 641,545, dated January 16, 1900.

Application filed July 10, 1899. Serial No. 723,355. (No model.)

To all whom it may concern:

Be it known that we, CHARLES T. RICHMOND and MAHLON M. ZELLERS, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Butting and Pointing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The invention relates to a machine which is adapted to automatically operate upon cylindrical carbon rods, such as electric-light carbons, to reduce them to uniform lengths and to "butt" and point them or to perform any one or more of said operations.

The invention consists of the construction and combination of the parts hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a plan view thereof. Fig. 3 is an enlarged longitudinal section of the front end of the machine—that is to say, the end at which the operations begin. Fig. 4 is a side elevation of the rear end of the machine and of the mechanism for receiving the finished carbons and carrying them away from the machine to a point where they may be conveniently gathered for packing. Fig. 5 is a plan view of the mechanism shown in Fig. 4; and Fig. 6 is a transverse sectional view on the line 6 6 of Fig. 2, showing the mechanism for pointing the carbons.

Referring to the parts by numerals, 1 represents a horizontal bed-plate, which is supported upon the standards 2, which are secured to a supplemental frame 3.

4 4 represent two endless chain belts which run over the bed-plate and in grooves 5 formed therein and are supported by said bed-plate. A plurality of transverse carrier-plates 6 are made fast near their ends to links in said two chain belts. These chain belts and carrier-plates constitute the carrier for the carbons. The plates are of such width that the space between them when the carrier is straightened out is less than the diameter of the carbons. Each of the chain belts passes around a sprocket-wheel 7 at the front end of the machine and another sprocket-wheel 8 at the rear end of the machine. Two sprocket-wheels 7 are secured to a shaft 9 and two sprocket-wheels 8 are secured to a shaft 10. Suitable mechanism is provided, as will be presently explained, for rotating one of said shafts, so as to cause said endless carrier to move over the bed-plate from the front and toward the rear end thereof.

In the top of each of the carrier-plates is a groove 12, which extends lengthwise of the plate, but transversely of the carrier of which the plate is a part. The depth of these grooves is somewhat less than the diameter of the carbon rods which are to be operated upon by the machine. A hopper 13 is located above the front end of the bed-plate and the carrier thereon. It has an inclined floor 14, down which the carbon rods roll by gravity onto the carrier. A plate 15, which is a part of the hopper, has its lower end at such a distance above the carrier that a carbon rod in one of the grooves 12 may pass under it; but a carbon rod resting on the carrier and not in one of those grooves may not pass under it. It therefore follows that the carbons will roll down the inclined floor onto the carrier and one by one will find their way into the carrier-grooves and that when in said grooves they may be carried out of the hopper.

Above the bed-plate there is a frame, which may consist of two longitudinally-extended bars 17 and their supporting mechanism. The supporting mechanism may consist of the standards 18, transverse rods 19, supported thereby, and hook-bolts 20, by means of which the bars 17 are held firmly upon said cross-rods. The function of this frame is to furnish suitable connections for certain pressure-plates 11, which are pressed by springs down upon the carbon rods in the carrier-grooves. These pressure-plates have no movement except toward and from the carrier, and therefore as the carbon rods are moved along by the carrier said carbon rods are caused to rotate upon their axes. These pressure-plates may have any suitable construction and they may be supported and held against any movement except a small and substantially vertical movement by any suitable mechanism, and the springs employed for producing the

downward pressure of said plates may be of any suitable form. As shown, however, bent spring-rods 21 are secured to the tops of the plates and are curved upward and properly secured to the bars 17. These springs therefore serve the double purpose of preventing the movement of the pressure-plates lengthwise of the machine and of causing the downward pressure of said plates upon the carbons. There may be any number of these pressure-plates; but it is necessary that they shall be of such number or size that they will press upon the carbon rods while being acted upon by the various instrumentalities provided in the machine for acting upon them. As shown, these pressure-plates consist of metal plates having felt 22 or some equivalent material secured against their lower faces by clamps 23.

The carbons placed in the hopper may be of various lengths, and one function of the machine shown is to reduce them all to the same length. To effect this result, all of the carbons upon the carrier are moved endwise in said grooves until the excess of length is all at one end. The means for so moving them is guide-plate 24, which is secured to the bed-plate and extends into the hopper under the gate 15, and the part which does so extend is curved or beveled, as indicated by dotted lines in Fig. 2. The remaining part of this plate is substantially parallel to the path of movement of the carrier. The carbons after taking their places in the carrier-grooves engage at their rear ends with this bent part of the guide-plate and are moved endwise, as described. At the front side of the machine is a scoring-knife 25, which engages with the carbons in the carrier-grooves and cuts an annular groove in each, which determines at what point it shall be subsequently broken off. This knife is secured to a plate 26, and this plate is connected by a link 27 with an ear 28, which ear is rigidly fastened to one of the bars 17. This knife-carrying plate is pressed downward by springs 30. These springs embrace bolts which are made fast to the plate 26 and pass through holes in a plate 31, which is made fast to one of the bars 17. The adjustable nuts on the ends of said bolts serve as stops to determine how far the springs may move the knife-carrying plate downward.

Attached to the bed-plate of the machine directly under the knife is a vertically-adjustable lifting-plate 32. The top edge of said plate nearest the hopper is beveled downward, while the top edge of said plate beneath the knife is slightly above the bottom of the grooves in which the carbons lie. The result is that the carbons engaging with this plate 32 are lifted slightly in said grooves and are all held in the same relation to the scoring-knife while said knife is cutting the grooves in the carbons.

33 represents a breaker-plate which is secured to the bed-plate of the machine just beyond the scoring-knife. The ends of the carbons are carried against this breaker-plate, the result being that said ends are broken off in the line of the groove produced by the scoring-knife.

A grinding-wheel 34 is secured to a longitudinally-extending shaft the axis of which is or ought to be in substantially the same horizontal plane with the axes of the carbon-rods. This shaft is mounted in standards 35, which rise from a plate 36, and this plate 36 is secured upon a horizontal plate 37, which is a part of a supplemental frame 3. The means employed for securing plate 36 to plate 37 consists of bolts 38, passing through slots 39 in the latter plate, whereby the bearings of the grinding-wheel may be adjusted toward and from the carbon-carrier. The chief reason for making these bearings thus adjustable is to be able to compensate for the wearing down of the grinding-wheel.

The carbons after being broken off by the breaker-plate, as described, are moved along by the carrier, with their rear ends still in contact with the guide-plate 24. The forward ends are thus brought into contact with the grinding-wheel 34, which grinding-wheel is being rotated by suitable means—as, for example, a belt which runs over a pulley 40. It will be remembered that the pressure-plates are causing the carbons to rotate upon their axes, and therefore the grinding-wheel 34 grinds the ends of the carbons smooth and substantially square. This is called "butting" the carbons.

The machine is adapted to also butt the other ends of the carbons whenever this is necessary. A grinding-wheel 41 is provided for this purpose. It is located on the rear side of the carrier and is secured to a shaft 42, mounted in suitable standards 43, which are secured to a plate 44. This plate 44 is adjustably secured to a plate 45, which is a part of the supplemental frame 3, by bolts 46, passing through slots 47. On the side of the machine opposite to the grinding-wheel 41 is another guide-plate 24^a. The end of this guide-plate which is nearest the grinding-wheel 34 may be bent or beveled, as shown, and this beveled portion acts to move the carbons endwise toward the rear side of the machine a very short distance. The face of this guide-plate engages with the front ends of the carbons and holds them in such position that their rear ends are ground by the grinding-wheel 41.

To complete the finishing of the carbons, it is necessary that they shall be pointed, and this is effected by a grinding-wheel 48. The axis of this grinding-wheel is below the axes of the other grinding-wheels, and the grinding-wheel itself extends a considerable distance under the carrier, as shown in Fig. 6. Therefore a tangent to that part of the grinding-wheel with which the ends of the carbon may engage lies at an angle of approximately forty-five degrees to the horizontal. A guide-plate 24^b is placed upon the rear side of

the machine. It has its end which is nearest the grinding-wheel 41 bent or beveled away from the carrier. Therefore the rear ends of the carbons after they leave the grinding-wheel 41 engage with this guide-plate and are moved endwise to a position to engage with and be ground by a grinding-wheel 48. The grinding-wheel 48 is adjustable to compensate for wear. It is secured to a shaft 49, which is mounted in bearings 50. These bearings are on the upper end of the standards 51. These standards are secured to an inclined plate 52, which forms a part of the supplemental frame 3, by means of bolts which pass through the feet of the standards and slots in the plate 52.

The guide-plates 24, 24[a], and 24[b] may have any suitable construction, and they may or may not be adjustable toward and from the carrier, dependent upon the character and variety of the work which the machine is designed to accomplish. As shown, however, the guide-plate 24[a] is not adjustable, while the plates 24 and 24[b] are adjustable, and so, also, is the hopper. The guide-plates 24 and 24[b], as shown, are similarly constructed—that is to say, each has on its outer side a plurality of studs 53, which extend through the holes in the vertical bracket-arms 54--and cotter-pins 55 or some analogous contrivances are provided to prevent the withdrawal of said studs. Springs 56 surround the studs and tend to yieldingly thrust the guide-plates toward the carrier. The brackets 54 have feet in which are slots 57, and through these slots pass bolts 58, by means of which the brackets are adjustably secured to the plate. Thus by adjusting the position of these brackets the position of the guide-plates may be likewise adjusted to provide for cutting the carbons to any desired length. In order to cooperate with the guide-plate 24 when the latter is made adjustable, it is desirable that the hopper be also made adjustable. To this end it is provided with feet 60, having transverse slots 61, through which pass the bolts 62, by means of which the hopper is adjustably secured to the bed-plate.

When the carrier is passing over the rear end sprockets, the carbons fall out of the grooves and onto the inclined plate 63, down which they roll onto a suitable receiver. It is desirable that they shall be delivered onto this receiver in parallel relations; but except for the swinging gate 64 they are liable to be turned in various directions. The gate is a light freely-swinging gate hinged at its upper end, its lower end being so close to the inclined plate that the carbons rolling down said plate must necessarily strike this gate and swing it outward a little before passing onto said receiver. This prevents the carbons from swinging out of parallel relation to the other carbons or returns them to such relation if they have swung out.

A curved hood 65 is secured over the rear end of the carrier to prevent the carbons from falling out of the grooves before they reach the proper point relative to the inclined plate.

Either one of the sprocket-shafts may be rotated to move the carrier and by any suitable mechanism. In the machine as shown 66 indicates the driving-shaft of the machine, and gears 67 68 are secured, respectively, to it and the sprocket-shaft 10, whereby the latter may be driven.

The receiver onto which the finished carbons are delivered is, as shown, an endless apron made up of two chain belts 69 and the transverse plates 70, which extend between them and are secured to the outer faces of their links. These chain belts run over the sprockets 71 72, secured to shafts 73 74, respectively. The mechanism shown for moving said belt consists of a ratchet 75, secured to shaft 74; a rocking lever 77, carrying a pawl 78; a rocking lever 79; a rod 80, connecting said levers; a spring 81 for moving lever in one direction, and the cams 82 on shaft, which engage with and move the lever in the opposite direction.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination of a carrier consisting of two endless chain belts, and grooved carrier-plates secured, near their ends, to the outer faces of the links of said chain belts, sprocket-wheels over which said chain belts pass, a support for the upper leg of said carrier, and spring-pressure plates for engaging with carbons in the grooves of said carrier-plates, with a guide-plate at one side of the carrier for engagement with one end of said carbons which guide-plate has an outwardly-beveled front end, and mechanism at the other side of said carrier for operating upon said carbons, substantially as and for the purpose specified.

2. In a machine of the character described, the combination of a movable carrier having transverse grooves adapted to receive the carbons, a hopper above the carrier having an inclined floor, an opening in its bottom, and a gate 15, with spring-pressure plates for engaging with the carbons in said grooves, a guide-plate at one side of the carrier for engaging with the ends of the carbons, and mechanism at the other side of the carrier for operating upon said carbons, substantially as and for the purpose specified.

3. In a machine of the character described, the combination of a movable carrier having transverse grooves adapted to receive the carbons, means for delivering the carbons into said grooves, and spring-pressure plates for engaging with said carbons, with a guide-plate at one side of the carrier and having an outwardly-beveled front end and mechanism at the other side of the carrier for operating upon the carbons in said grooves, substantially as and for the purpose specified.

4. In a machine of the character described,

the combination of a movable carrier having transverse grooves adapted to receive the carbons, means for delivering the carbons into said grooves, and spring-pressure plates for engaging with the carbons in said grooves, with a guide-plate at one side of the carrier and having an outwardly-beveled front end, a spring-actuated scoring-knife for scoring the carbons near their opposite end, and a breaker-plate, substantially as and for the purpose specified.

5. In a machine of the character described, the combination of a movable carrier having transverse grooves adapted to receive the carbons, means for delivering the carbons into said grooves, and spring-pressure plates for engaging with said carbons, with a guide-plate at one side of the carrier and having an outwardly-beveled front end, a lifting-plate for engaging beneath the carbons near their opposite end, a scoring-knife located above said lifting-plate and spring-pressed toward the same, and a breaker-plate, substantially as and for the purpose specified.

6. In a machine of the character described, the combination of a movable carrier having transverse grooves adapted to receive the carbons, means for delivering carbons into said grooves, and spring-pressure plates for engaging with said carbons, with a guide-plate located at one side of the carrier and having an outwardly-beveled front end, and a grinding-wheel located at the opposite side of said carrier and adapted to engage with the adjacent ends of the carbons, a guide-plate beyond said grinding-wheel and on the same side of the carrier, which guide-plate has an outwardly-beveled front end, and a grinding-wheel on the other side of said carrier opposite the last-named guide-plate, substantially as and for the purpose specified.

7. In a machine of the character described, the combination of a movable carrier having transverse grooves adapted to receive the carbons, means for delivering carbons into said grooves, and spring-pressure plates for engaging with said carbons, with a guide-plate at one side of the carrier, a grinding-wheel on the opposite side of said carrier, bearings for said grinding-wheel which lie normally below the plane in which the carbons move, inclined supports for said bearings, and means for securing the bearings to said inclined supports in various positions, substantially as and for the purpose specified.

8. In a machine of the character described, the combination of an endless flexible movable carrier having transverse grooves adapted to receive the carbons, a support for the upper leg of said carrier, and means for delivering the carbons into said grooves, and pressure-plates for engaging with the carbons in said grooves, with guide-plates at one side of the carrier for engaging with the adjacent ends of the carbons, and mechanism at the other side of the carrier for operating upon the opposite ends of said carbons, an inclined plate located at the rear end of said carrier, whereby the carbons falling from the carrier-grooves will fall upon said plate, and a swinging gate with which the carbons will engage which roll down said plate, substantially as and for the purpose specified.

9. In a machine of the character described, the combination of a movable carrier consisting of two endless chain belts, and grooved carrier-plates secured near their ends to the outer faces of the links of said belt, sprocket-wheels over which said chain belts pass, and a support for the upper leg of said carrier, with a curved shield held close to the rear curved end of said carrier, an inclined plate upon which the carbons drop out of the grooves of the carrier, and a swinging gate with which the carbons rolling down said plate must engage, substantially as and for the purpose specified.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

CHARLES T. RICHMOND.
MAHLON M. ZELLERS.

Witnesses:
H. E. HACKENBERG,
E. H. WHITLOCK.