(No Model.)

3 Sheets—Sheet 1.

C. A. WRIGHT.

MACHINE FOR TREATING CARDS.

No. 413,995. Patented Oct. 29, 1889.

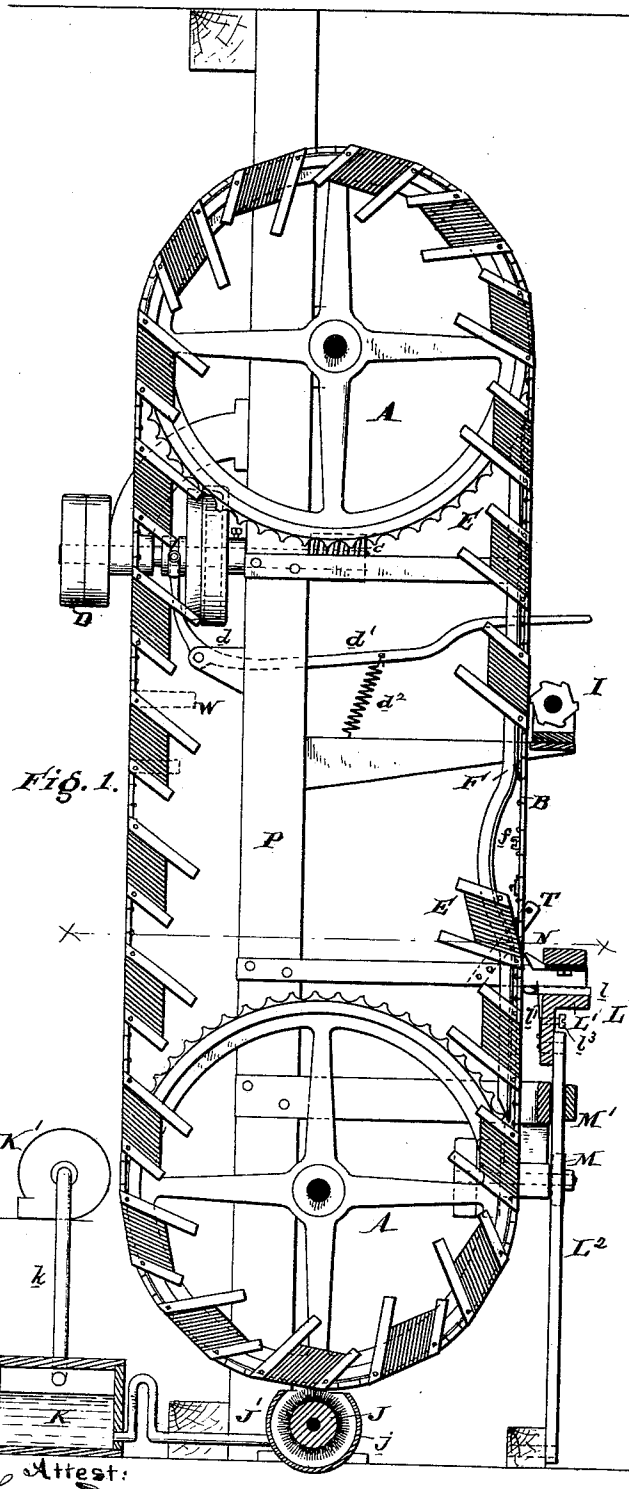

Fig. 1.

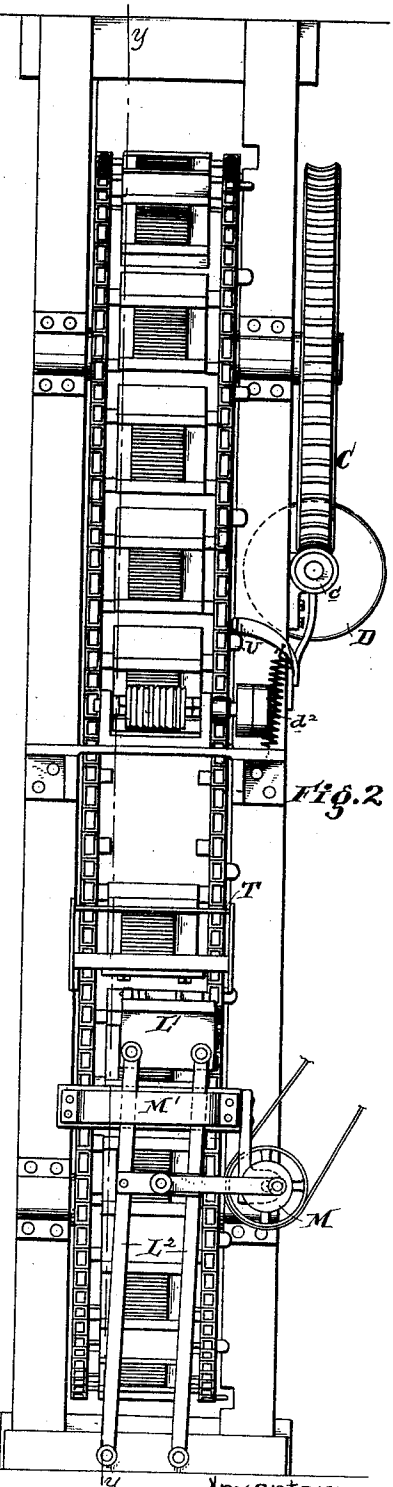

Fig. 2.

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(No Model.) 3 Sheets—Sheet 2.

C. A. WRIGHT.

MACHINE FOR TREATING CARDS.

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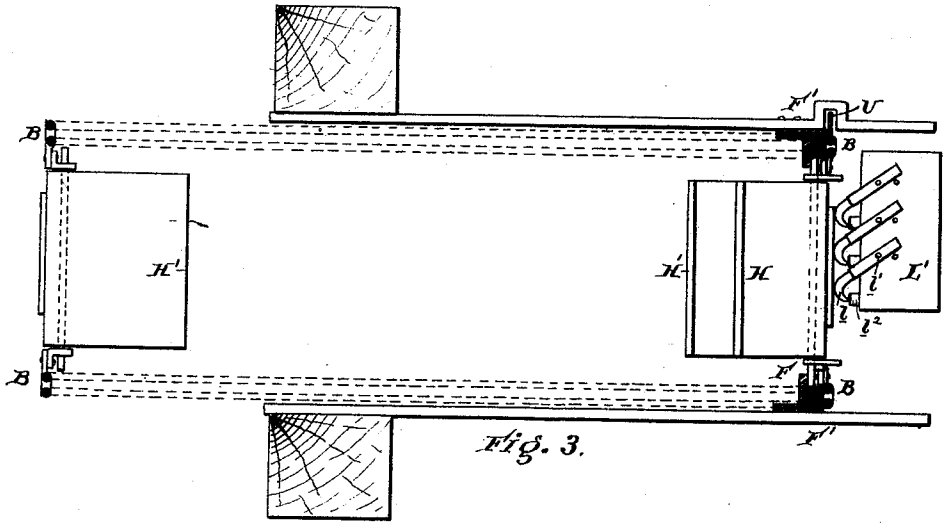

Fig. 3.

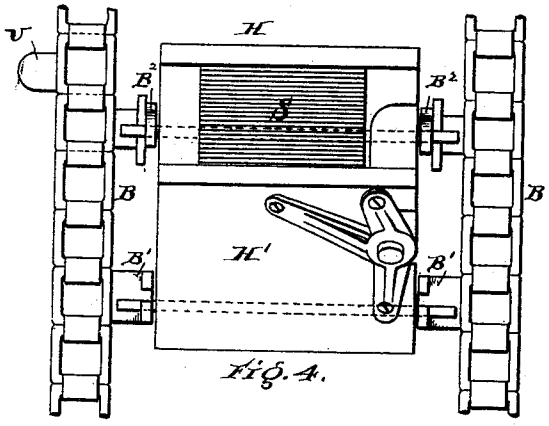

Fig. 4.

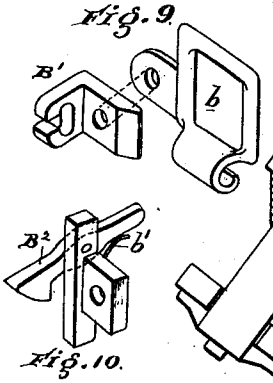

Fig. 9.

Fig. 10.

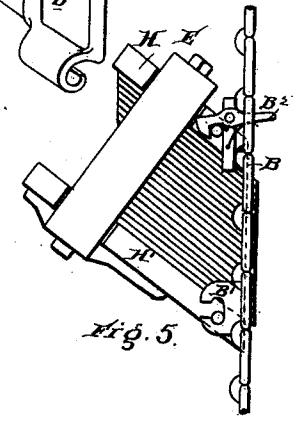

Fig. 5.

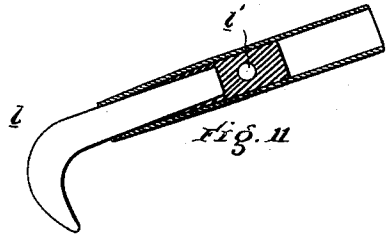

Fig. 11.

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(No Model.)

3 Sheets—Sheet 3.

C. A. WRIGHT.

MACHINE FOR TREATING CARDS.

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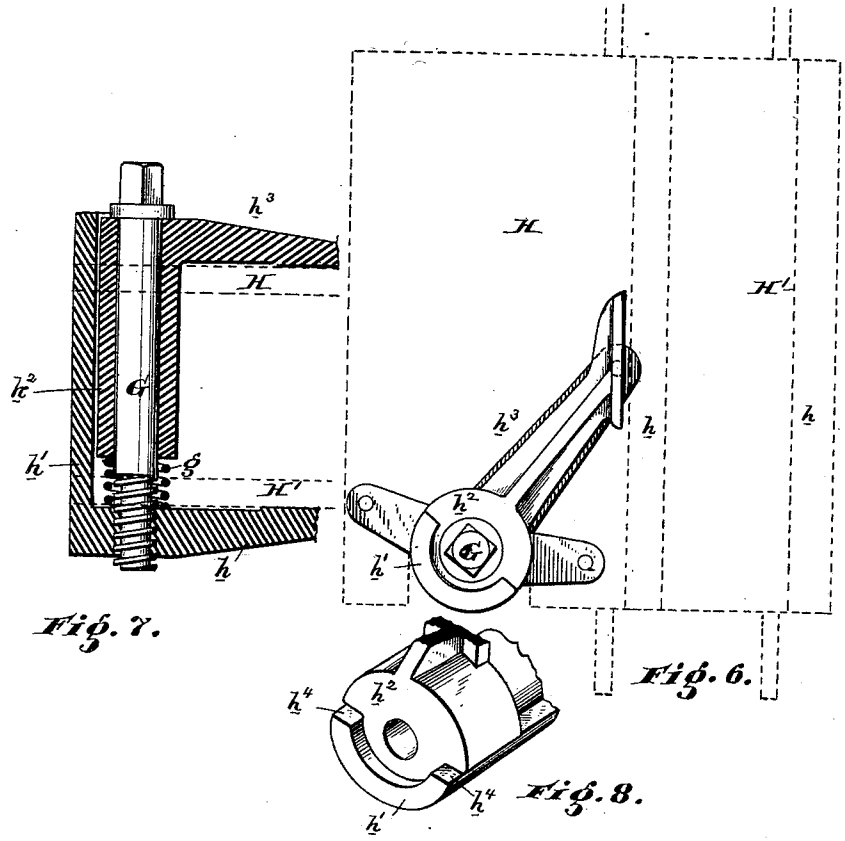

Fig. 7.

Fig. 6.

Fig. 8.

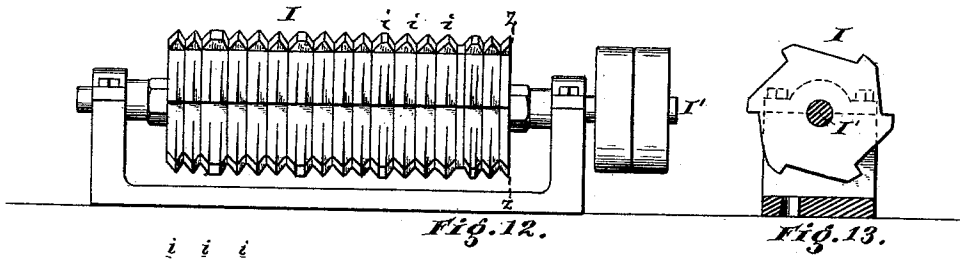

Fig. 12.

Fig. 13.

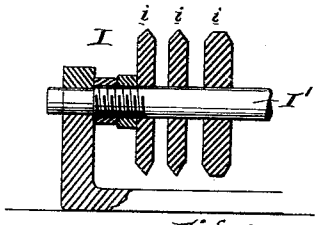

Fig. 14.

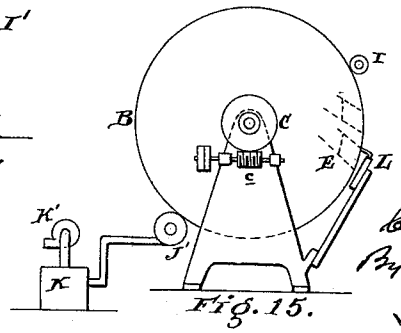

Fig. 15.

Attest:

Henry Drury

Inventor:

Chas. A. Wright

By his atty

UNITED STATES PATENT OFFICE.

CHARLES A. WRIGHT, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR TREATING CARDS.

SPECIFICATION forming part of Letters Patent No. 413,995, dated October 29, 1889.

Application filed January 7, 1889. Serial No. 295,649. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. WRIGHT, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Machines for Treating Cards, of which the following is a specification.

My invention has reference to machines for treating cards, which machine is to be used in the combined processes of cutting, gilding, embossing, or indenting, or either of them separately; and it consists of certain improvements, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

In patents granted to me and respectively numbered and dated 290,303, December 18, 1883, and 363,936, May 31, 1887, are shown endless carriers, and card-clamps adapted to hold a series of packs of cards and convey them in succession past an operator, who may lay on the gold and burnish the gilded cards while in the custody of said carrier-clamps. In the machines disclosed in said patents the operation of burnishing the gold was not automatic and required the constant attention of a skilled operator. The laying on of the gold does not require the skill necessary to the burnisher, and hence, as burnishing is the most difficult part of the card-gilding art, it is desirable that this operation shall be made automatic. Furthermore, the burnishing by hand does not produce so bright an edge as can be done by machinery. In addition to the laying-on and burnishing operations *per se* there is a waxing process, in which the gold-leaf, after being laid on the edges of the cards, is waxed before burnishing, so as to prevent the burnishing-tool from scratching the gold. Heretofore this operation was also done by hand. It is desirable that this operation, like that of burnishing, shall be performed automatically, as it is usually the same operator who waxes and burnishes, and in dispensing with the burnisher we naturally remove the operator who usually performs the operation of waxing the gold.

In some forms of gilded cards the edges are serrated or notched or otherwise cut, and this is commonly done as a separate operation and with separate handling of the cards. It is desirable to perform this operation automatically in the same machine which performs the functions of waxing and burnishing.

The object of my invention is to provide a machine suitable for conveying cards held in packs in suitable clamps from a given place and after they are treated return them automatically, and while in the custody of the machine pass the cards in operative contact with a cutter, a waxing device, a burnishing device, and an embossing device, or either or any of them, whereby the operations of cutting, waxing, burnishing, and embossing, or any of them, may be automatically carried on. The machine is suitably constructed to admit of the gold-leaf being laid on the cards after being cut or notched and before passing to the waxing device. The greatest possible distance should be allowed between the place where the gold-leaf is laid on and where it is waxed to allow the sizing to dry. In place of or in conjunction with cutting the cards the edges may be embossed or indented, and this may be done, if desired, after the gilding operation. The same machine is adapted to the various makes of cards, but is especially designed for what are known as "beveled-edged" cards.

Another important feature of my invention lies in the fact that the clamps for holding the cards are detachable from the carriers, so that a clamp may be removed and filled with cards that have been fanned out and then replaced in the machine. Furthermore, owing to it being necessary to properly present the beveled or other edges of the cards to the cutters, burnishers, &c., it becomes necessary in practice to provide a suitable method of holding the card-clamps to the carriers. I have found that it is best accomplished when the boards or faces which directly clamp the cards, and whose front edges must come in line with the front edges of the cards, are directly supported by the carriers, as this requires but one adjustment. I also provide means for automatically arresting the movement of the machine when each card-clamp is brought to a given point where it may be removed. This prevents the gilded and burnished cards from passing above and being subjected to the cutters again, which would undo all of the finished work. If the operator is at hand, the machine need never be

stopped, as a clamp with gilded and burnished cards may be removed and a fresh clamp with unfinished cards may be inserted instantly. It is clear that the clamps may have their complement of cards treated to the operation of laying on the gold-leaf before they are placed in the machine; but in this case the cutters would be thrown out of action, so as not to abrade the gold-leaf. My object is also to collect all the loose gold-leaf from the cards and collect it under water. It is evident that the cutters may be employed to scrape or cut the edges of the cards held in the clamps, so as to bevel the edges ready for receiving the gold.

The particular kind of cutters employed is unimportant when considering my invention, as various kinds of cutters can be used.

In place of the endless chain carriers shown, to which the clamps are detachably connected, I may employ large wheels, to the peripheries of which the clamps may be attached. This modification would bear substantially the same relation to the endless chains that the wheel of my 1883 patent bears to the endless chain of card-clamps of my 1887 patent hereinbefore referred to. They are equivalents when considering the invention broadly.

It will be understood that while I describe one form of construction well adapted to the purpose of my invention I do not limit myself to the details thereof, as they may be modified in various ways without departing from the spirit of the invention.

In the drawings, Figure 1 is a sectional side elevation of a machine embodying my invention, taken on line *y y* of Fig. 2. Fig. 2 is a front view of same. Fig. 3 is a sectional plan view of same on line *x x* of Fig. 1. Fig. 4 is a rear extension of a portion of the carriers and one clamp. Fig 5 is a side elevation of same. Fig. 6 is a plan view of one of the clamps with the boards shown in dotted lines. Fig. 7 is a sectional side elevation of a part of same. Fig. 8 is a perspective view of a portion of same. Figs. 9 and 10 are perspective views of details of the clamp-supporting carrier-sections. Fig. 11 is a sectional plan view of one of the burnishers. Fig. 12 is a side elevation of a cutter for cutting the cards. Fig. 13 is a sectional side view of same on line *z z*. Fig. 14 is a sectional elevation of a portion of Fig. 12, showing how the cutters are made; and Fig. 15 is a side elevation of a modified form of my invention.

A A are two pairs of sprocket-wheels arranged at a distance apart and preferably one pair above the other, so as to take up but little room by the completed machine. The sprocket-wheels of each pair are separated a distance apart sufficient to receive the clamps between them. Over these two pairs of sprocket-wheels are arranged two parallel endless chains or carriers B, the speed of travel of which is uniform. These carriers are provided at given distances apart with means for supporting the clamps. As shown, the means consists of right-angled slotted or notched pieces B′, secured to certain links of the chains, and snap-hooks B^2, pivoted to other links of the chains. (See Figs. 9 and 10.) These slotted or notched pieces B′ and hooks B^2 are arranged in pairs and point away from the front of the chains. The clamps E have lateral pins or projections R, which are received in the notches of the pieces B′ and under the hooks B^2, and are thereby supported and conveyed by the carriers. These clamps E are formed of a frame of metal having two jaws, which may be drawn together by a screw, and are adapted to act upon two clamping-boards H and H′ to cause them to clamp the cards S. The front edges of these boards are preferably beveled, as shown, and one projects beyond the other. The longer board H′ is secured to the jaw *h*, having the upright guide-section *h′*, and the shorter board is acted on by the movable jaw h^3, having the guide-section h^2, adapted to be guided on the section *h′*, the lateral guide-edges h^4 thereof acting to prevent the jaw h^3 from twisting out of line. By this construction the forward edge of the jaw h^3 is brought close to the front edge of the board H. (See Fig. 6.) The movable jaw is moved to clamp the cards by turning the screw G, which may, if desired, be provided with suitable means to turn it. A spring *g* is adapted to separate the jaws *h* h^3 when the screw is turned backward. While I have found this construction of clamp well adapted to the purpose, I do not limit myself to any particular detail of construction. The parts H H′ may be of wood or metal, the former being preferred owing to its lightness. The lateral and forward edges of these boards H H′ are provided with laterally-projecting pins R, which, when supported by the parts B′ B^2 of the carriers, insure the front edges of the cards and boards being moved in a given fixed plane.

The frame P of the machine is provided with guides F, which, acting upon the pins R and chains, keep the clamps in place when ascending. When descending, the clamps rest upon the hooks B^2, hung in the slots of the pieces B′ of the carriers, and no guides F are necessary, though they may be employed, if desired. At one part of the guides F is formed a curved part *f*, which curves away from the carriers, so that as the clamps are moved up the upper part of the clamp falls inward and away from the carrier and is in position to be removed and admit of the insertion of a new clamp and cards. The hooks B^2 are above the pieces B′, and are held down by springs *b′*, and in the upward movement of the carriers and clamps the ends of the pivoted hooks strike the stops T and unlatch the clamps, allowing them to fall away upon the guides *f*, as above set out. As soon as the hooks pass the stops T they are automatically reset to receive another clamp.

I represents a rotating cutter, one form of which is best shown in Figs. 12 to 14. It con-

sists of a rotating shaft I′, having a series of disk cutters *i*, which may be employed to notch or serrate the edges of the cards as they are conveyed past by the clamps and carriers. In place of serrating, the cutters may be employed to cut or bevel the edges of the cards. After passing the cutters I the edges of the cards may have the gold laid on, and then the cards are conveyed up over the top pair of wheels A and down toward the lower pair of wheels, having had sufficient time to allow the sizing to dry and put the gold in condition for burnishing. The distance traveled by the clamps from cutter I or curved guide *f* to the waxing-brush J should be as long as possible to allow the sizing to thoroughly dry and prevent the gold being abraded by the brush or subsequently by the burnishing-tools. The waxing-brush J rotates in contact with the outer edges of the cards, and any loose gold which is brushed off is sucked down into the case *j*, and thence through a pipe J′ under the water in a closed tank K, the air being exhausted through the water by the exhaust-fan K′ and pipe *k*. By this means all of the loose gold-leaf is caught in the water and by its weight sinks to the bottom and is there collected. This is very important as a means of automatically saving all the loose gold without material labor.

After the card-clamps and their cards pass the brush J they pass in front of the burnisher L, which may be made in any suitable manner. The construction shown is well adapted to the purpose and is that preferred. It consists of a frame L′, supported by two parallel pivoted bars L^2, whereby it may have a lateral vibratory movement through the instrumentality of the crank M and link *m*, or any other suitable mechanical movement.

M′ is a guide for holding the burnisher up to its work.

Pivoted to the top of the frame L′ are a series of burnisher-pieces *l*, fulcrumed at *l′*, and pressed toward the cards in the clamps by springs l^2, made adjustable as to their tension by adjusting-screws l^3. In this manner the pressure of the burnishing-tool upon the gilded surface may be adjusted to a nicety. By having a series of burnishing-tools arranged laterally with respect to each other only a small lateral movement is necessary to cover the entire edge of the widest card. I have found that this mechanical burnishing operation produces a far brighter and more uniform finish and is much more desirable than hand-work.

In many kinds of cards the cards are in condition for the market upon leaving the burnisher L; but, again, in other cases, it is desired that the edges shall be what is known as "embossed" or "indented," and this may be done by causing the gilded cards, after leaving the burnisher, to be moved past and in contact with the embossing or indenting blade N, which is made adjustable to or from the cards to vary the degree of embossing or prevent such action altogether. The embossing device may be rotary disks somewhat like I, if desired, but do not cut. After leaving the embossing-blade the clamps are released in the curved guide *f*, as shown in Fig. 1.

It is clear that the cutter I may be moved out of contact with the cards or be removed altogether and the cards cut or beveled in another machine and placed in the clamps, and it is also evident that, if desired, the cards so beveled and placed in the clamps E may have the gold laid on prior to being placed in the carriers.

While, for obvious reasons, I have preferred to make my clamps face outward or away from the center of the wheels, yet they may be readily turned the other way.

The carriers and wheels may be rotated by a worm-wheel C and worm *c*, driven by a belt-wheel D, connected to the worm through a clutch *d*, operated by a lever *d′*. This lever normally is drawn down by a spring d^2, so as to put the clutch in action, and when a clamp comes into the curved part *f* of the guide F a projection U on the side of the carriers strikes the lever and throws the clutch out of action, stopping the machine. There is one of these projections U in line with each clamp, so as to automatically stop the machine in one complete revolution of the carriers as often as there are numbers of clamps. If the operator is at hand, he can make a change of clamps without allowing the machine to stop. To start the machine when stopped, it is simply necessary to push the lever *d′* off the projection U, and thus allow the spring d^2 to put the clutch into action. The pulley D is always rotating. If desired, the clutch device for stopping and starting the machine may be dispensed with. Lateral movement of the carriers may be prevented by providing the guides F with lateral edges F′, (see Fig. 3,) which hold the chains against lateral displacement.

It will be understood that the essential features of my invention are found in the endless carrier, be it a chain, band, wheel, or other traveling device combined with card-clamps each adapted to hold a bunch or pack of cards and convey them in a given plane past cutters, waxers, burnishers, or other suitable means for treating or acting on the cards, substituting mechanism for what now requires skilled labor.

It is clear that my invention is not limited to any number of cards in each clamp, and it would exist if the cards were conveyed past a burnisher in series or one at a time.

The card-clamps may have their clamping-faces at right angles to the edges of the cards, between the front edges of the clamp, as indicated in dotted lines at W, Fig. 1, or the said surfaces may be at acute and obtuse angles thereto, as indicated in general in the drawings.

The particular means employed for draw-

ing the boards or clamping-surfaces are also immaterial, and in place of the form of clamp here set out either of the clamps of my patents above specified may be employed in lieu thereof.

There are many mechanical devices which could be employed for supporting the clamps to the carriers other than those shown; hence I do not confine myself to the details illustrated. The clamps could be permanently connected to the carriers, if desired, in place of being detachable; but I prefer the latter. as being best adapted to the purpose of my invention.

In Fig. 15 the endless carriers are shown in the form of a wheel; otherwise the relative arrangement of the parts is the same as in Fig. 1. This modification of my invention would require more space than the preferred form, and hence is perhaps not so desirable.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for treating cards and similar articles, an endless carrier, in combination with a series of card-clamps carried or conveyed thereby and a burnishing-tool having a movement relatively to the card-clamp.

2. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a laterally-vibrating burnishing-tool arranged in line with the edges of the cards in the clamps.

3. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a laterally-vibrating burnishing-tool arranged in line with the edges of the cards in the clamps and vibrated substantially with the length of the edges of the cards being gilded.

4. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a laterally-vibrating burnishing-tool arranged in line with the edges of the cards in the clamps and vibrated substantially with the length of the edges of the cards being gilded, and a spring to press said burnishing-tool against the cards.

5. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a laterally-vibrating burnishing-tool arranged in line with the edges of the cards in the clamps and vibrated substantially with the length of the edges of the cards being gilded, a spring to press said burnishing-tool against the cards, and means to adjust the tension of the spring.

6. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a transversely vibrating or reciprocating frame and two or more burnishing-tools arranged laterally thereon at different distances apart.

7. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a transversely vibrating or reciprocating frame, two or more burnishing-tools arranged laterally thereon at different distances apart, and springs to press said burnishing-tools against the cards.

8. In a machine for treating cards and similar articles, the combination of an endless carrier, one or more card-clamps carried or conveyed thereby, and a burnisher arranged in the path of the card-clamps and so that their cards shall be moved past and in contact with the burnisher.

9. In a machine for treating cards and similar articles, the combination of an endless carrier with a series of detachable card-clamps carried or conveyed thereby and a burnishing device for burnishing the cards held in the clamps as they are moved past the burnisher.

10. In a machine for treating cards and similar articles, the combination of a carrier, a series of card-clamps carried or conveyed thereby, and a cutting tool or device arranged in the path of the cards in the clamps.

11. In a machine for treating cards and similar articles, the combination of a carrier, a series of card-clamps carried or conveyed thereby, and a rotary cutting tool or device arranged in the path of the cards in the clamps.

12. In a machine for treating cards and similar articles, the combination of a carrier and clamps for moving packs of cards past given points with a burnishing tool or device and an embossing or indenting device in the path of the cards and so arranged as to act on the gilded cards after leaving the burnisher.

13. In a machine for treating cards and similar articles, the combination of a carrier and clamps for moving packs of cards past a given point with an embossing or indenting device arranged in the path of the cards.

14. In a machine for treating cards and similar articles, the combination of a carrier and clamps for moving packs of cards past given points with a cutter to cut the edges of the cards and a burnisher to burnish the edges after being cut and treated with gold.

15. In a machine for treating cards and similar articles, a conveyer to move a card past a given point, in combination with an embossing device arranged in the path of the card and against which it is pressed.

16. In a machine for treating cards and similar articles, a conveyer to move a card past a given point, in combination with a burnishing device arranged in the path of the card and against which it is pressed.

17. In a machine for treating cards and similar articles, a carrier device moving past a burnisher, a detachable card-clamp detach-

ably connected to the carrier and so as to present the edge of the card or cards in the clamp to the burnisher as it is passed, and a burnisher arranged in the path of the card or cards held in the clamp.

18. In a machine for treating cards and similar articles, a carrier device moving past a burnisher, a detachable card-clamp detachably connected to the carrier and so as to present the edge of the card or cards in the clamp to the burnisher as it is passed, and a movable burnisher arranged in the path of the card or cards held in the clamp.

19. In a machine for treating cards and similar articles, an endless carrier having a series of card-clamps, in combination with a waxing-brush to wax the gilded edges of the cards, an inclosing-case to receive the gold-leaf brushed off the cards, a pipe leading from said case to a closed tank below the liquid-level, and an exhauster for exhausting the air from said tank and the case around the brush.

20. In a machine for treating cards and similar articles, an endless carrier having a series of card-clamps, in combination with a waxing-brush to wax the gilded edges of the cards, an inclosing-case around said brush, a liquid-tank, and means for exhausting the air from said case for collecting the waste gold-leaf brushed from the cards.

21. In a machine for treating cards and similar articles, an endless carrier having a series of card-clamps, in combination with a waxing-brush to wax the gilded edges of the cards, an inclosing-case around said brush, a liquid-tank, and means for exhausting the air from said case for collecting the waste gold-leaf brushed from the cards in said liquid-tank below the liquid.

22. In a machine for treating cards and similar articles, an endless carrier having a series of card-clamps, in combination with a waxing-brush to wax the gilded edges of the cards, an inclosing-case around said brush, a liquid-tank, means for exhausting the air from said case for collecting the waste gold-leaf brushed from the cards, and a burnishing device arranged in the path of the cards after leaving the waxing-brush.

23. In a machine for treating cards and similar articles, an endless carrier having a series of card-clamps, in combination with a waxing-brush to wax the gilded edges of the cards and a burnishing device arranged in the path of the cards for burnishing the waxed gilded edges of said cards.

24. In a machine for treating cards and similar articles, the combination of an endless carrier and a series of card-clamps conveyed thereby, a movable frame arranged close to the clamps, a stationary guide therefor, and a burnishing-tool carried upon said movable frame and movable with it.

25. In a machine for treating cards and similar articles, the combination of an endless carrier and a series of card-clamps conveyed thereby, a movable frame arranged close to the clamps, a stationary guide therefor, a burnishing-tool carried upon said movable frame and movable with it, and a spring to press said burnishing-tool toward the edges of the cards in the clamps.

26. In a machine for treating cards and similar articles, the combination of an endless carrier, detachable card-clamps carried thereby, and a stationary guide F, to guide said carrier and clamps in a portion of its length, and in which the said guide is formed with a curved part *f*, bent away from the carriers to allow the clamps to be released from the carrier.

27. In a machine for treating cards and similar articles, an endless carrier, in combination with a series of card-clamps conveyed thereby, and in which the front edges of the clamps and their cards are all in the same plane when passing a given point.

28. In a machine for treating cards and similar articles, an endless carrier, in combination with a series of card-clamps conveyed thereby, in which the front edges of the clamps and their cards are all in the same plane when passing a given point, and a burnishing-tool arranged at said point to treat the cards in succession as they are conveyed past it.

29. In a machine for treating cards and similar articles, an endless chain carrier, in combination with a series of card-clamps conveyed thereby, and in which the front edges of the clamps and their cards are all in the same plane with the line of the carrier-chains.

30. In a machine for treating cards and similar articles, the combination of two endless chains, each having notched projections at intervals apart, in combination with two or more card-clamps having pins or projections to fit into the notches, and thereby connect the clamps with the chains.

31. In a machine for treating cards and similar articles, the combination of two endless chains B, having thin links at given distances apart alternately provided with notched or slotted projections B′ and spring snap-hooks B^2, and card-clamps provided with pins or projections R to fit into the notches or slots and under the hooks.

32. In a machine for treating cards and similar articles, the combination of two endless chains B, having thin links at given distances apart alternately provided with notched or slotted projections B′ and spring snap-hooks B^2, card-clamps provided with pins or projections R, to fit into the notches or slots and under the hooks, the fixed guide F, having the curved part *f*, to guide said chains B and pins R, and a stop T in the path of said hooks, to release the clamp when they reach the curved part *f* of the guide.

33. In a machine for treating cards and similar articles, the combination of an endless carrier having a series of card-clamps, power mechanism to move said endless carrier, a

clutch device to arrest the movement of the carrier, a lever to operate the clutch, and projections carried by the carriers to actuate the lever at given times in the travel of said carrier to stop the machine.

34. In a machine for treating cards and similar articles, the combination of an endless carrier having a series of card-clamps, power mechanism to move said endless carrier, means to stop the action of the power mechanism to arrest the movement of the carrier, and automatic mechanism actuated by the carriers or their connections to stop the movement of the carrier at given times in its travel.

35. In an organized machine for treating cards, a card-clamp for card-gilding and other purposes, consisting of the boards H and H′, the section h', having jaw h, section h^2, having jaw h^3, and clamping-screw G, substantially as set out.

36. In an organized machine for treating cards, a card-clamp for card-gilding and other purposes, consisting of the boards H and H′, of different lengths, the section h', having jaw h, section h^2, having jaw h^3, and clamping-screw G, substantially as set out.

37. In an organized machine for treating cards, a card-clamp for card-gilding and other purposes, consisting of the boards H and H′, the section h', having jaw h, section h^2, having jaw h^3, clamping-screw G, and spring g, to spread the jaws apart, substantially as set out.

38. In an organized machine for treating cards, a card-clamp for card-gilding and other purposes, consisting of the boards H and H′, having pins R on their ends and near their front edges, the section h', having jaw h, section h^2, having jaw h^3, and clamping-screw G, substantially as set out.

39. In an organized machine for treating cards, the combination of two clamping boards or parts H H′, having pins or projections R upon their ends and near their front edges, and a suitable clamping device to draw the parts H H′ toward each other.

40. In an organized machine for treating cards, the combination of two clamping boards or parts H H′, of different lengths and having pins or projections R upon their ends and near their front edges, and a suitable clamping device to draw the parts H H′ toward each other.

41. An endless carrier, in combination with a series of card-clamps carried thereby, having their clamping-surfaces arranged at an angle to the line of travel, whereby the front edges of the cards clamped in the several clamps shall move in the same plane in passing a given place or places.

In testimony of which invention I hereunto set my hand.

CHARLES A. WRIGHT.

Witnesses:
ERNEST HOWARD HUNTER,
E. M. BRECKINREED.