(No Model.) 3 Sheets—Sheet 1.

C. A. WRIGHT.

MACHINE FOR TREATING CARDS.

No. 461,860. Patented Oct. 27, 1891.

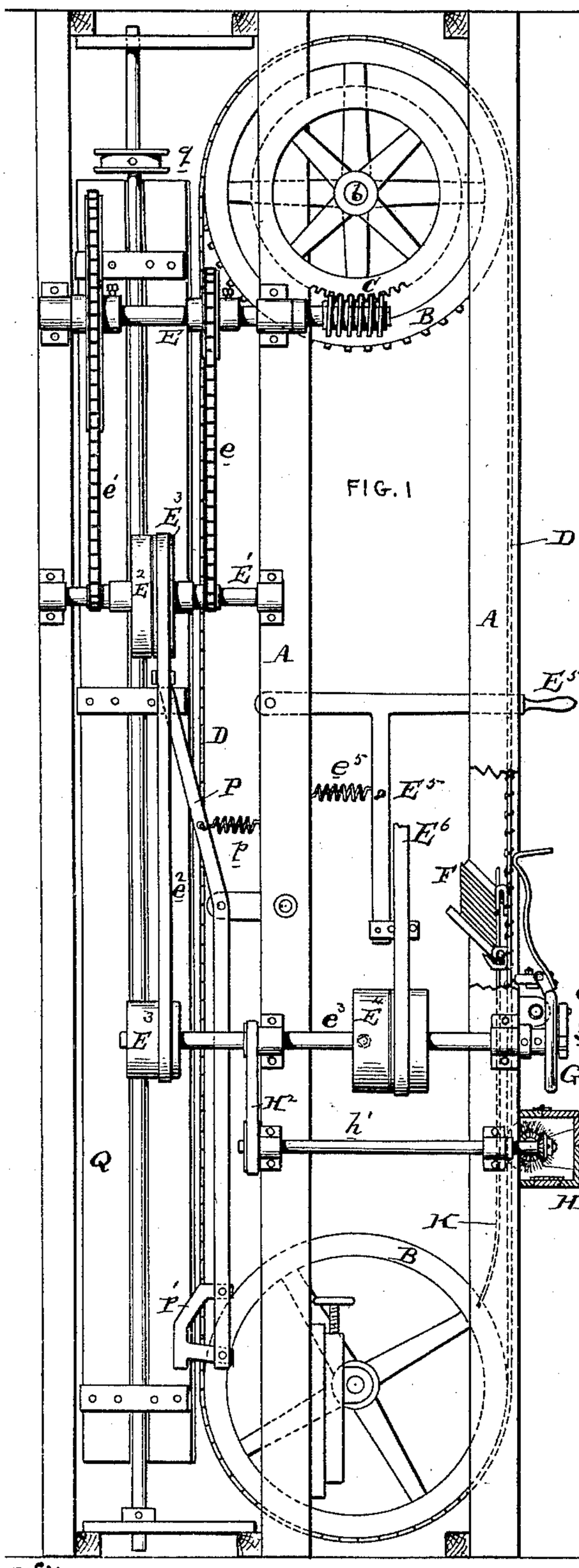

FIG. 1

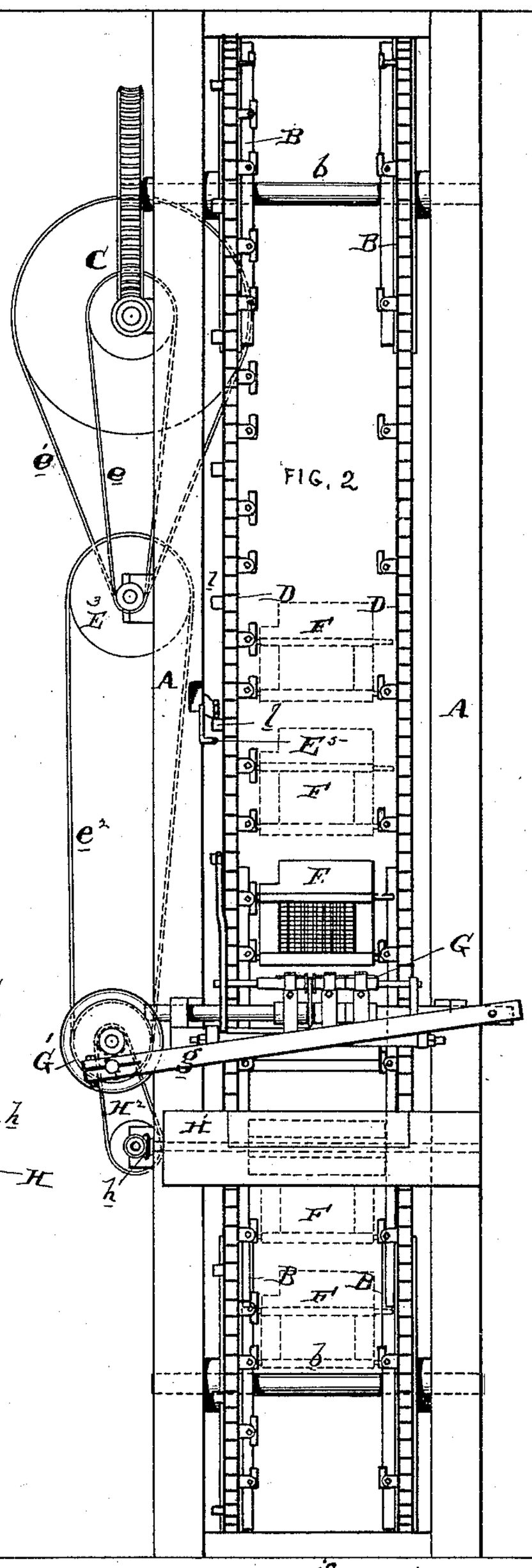

FIG. 2

Witnesses:
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S. T. Yerkes.

Inventor:
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By his atty
Thos. G. Orrung

(No Model.) 3 Sheets—Sheet 2.

C. A. WRIGHT.

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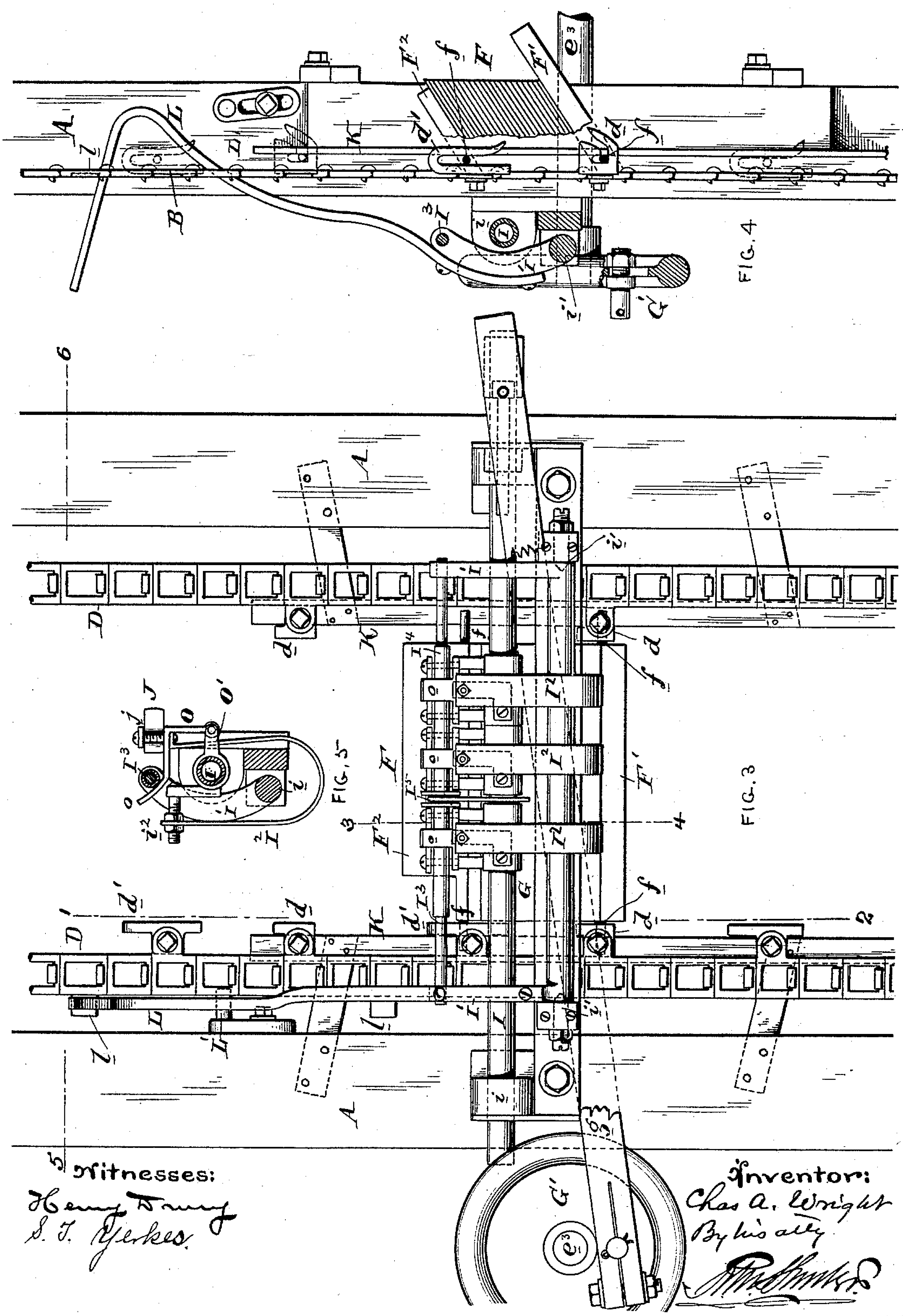

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S. T. Yerkes.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 3.

C. A. WRIGHT.

MACHINE FOR TREATING CARDS.

No. 461,860. Patented Oct. 27, 1891.

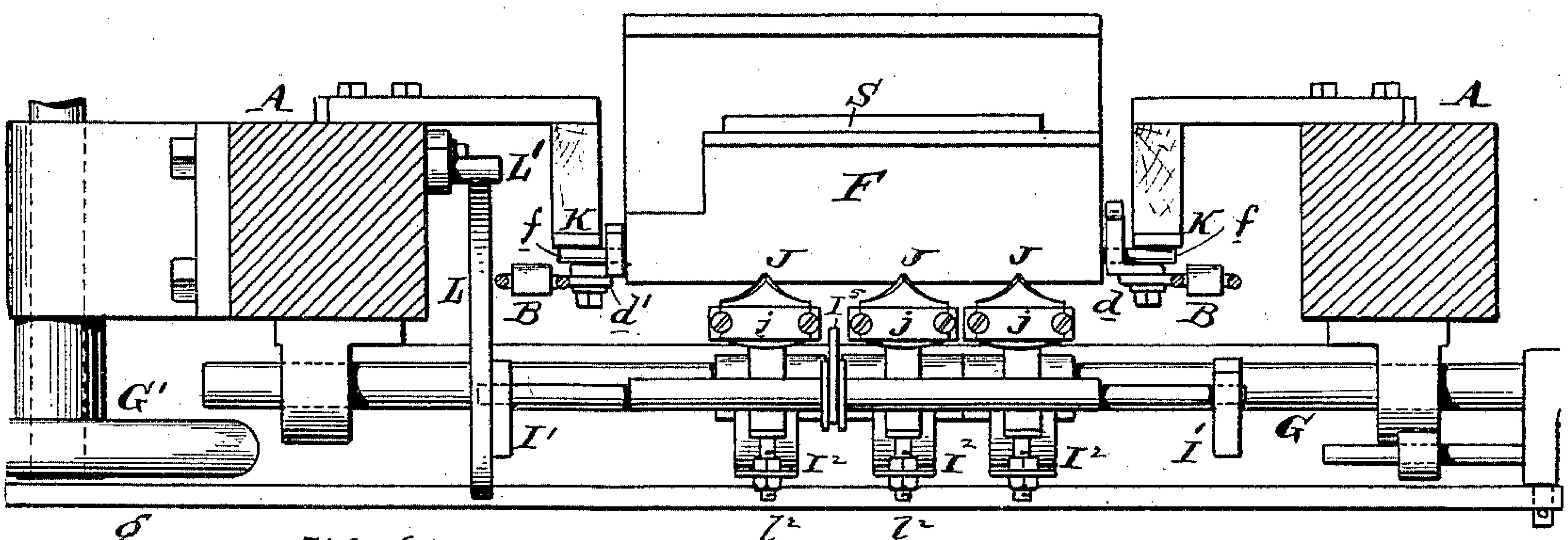
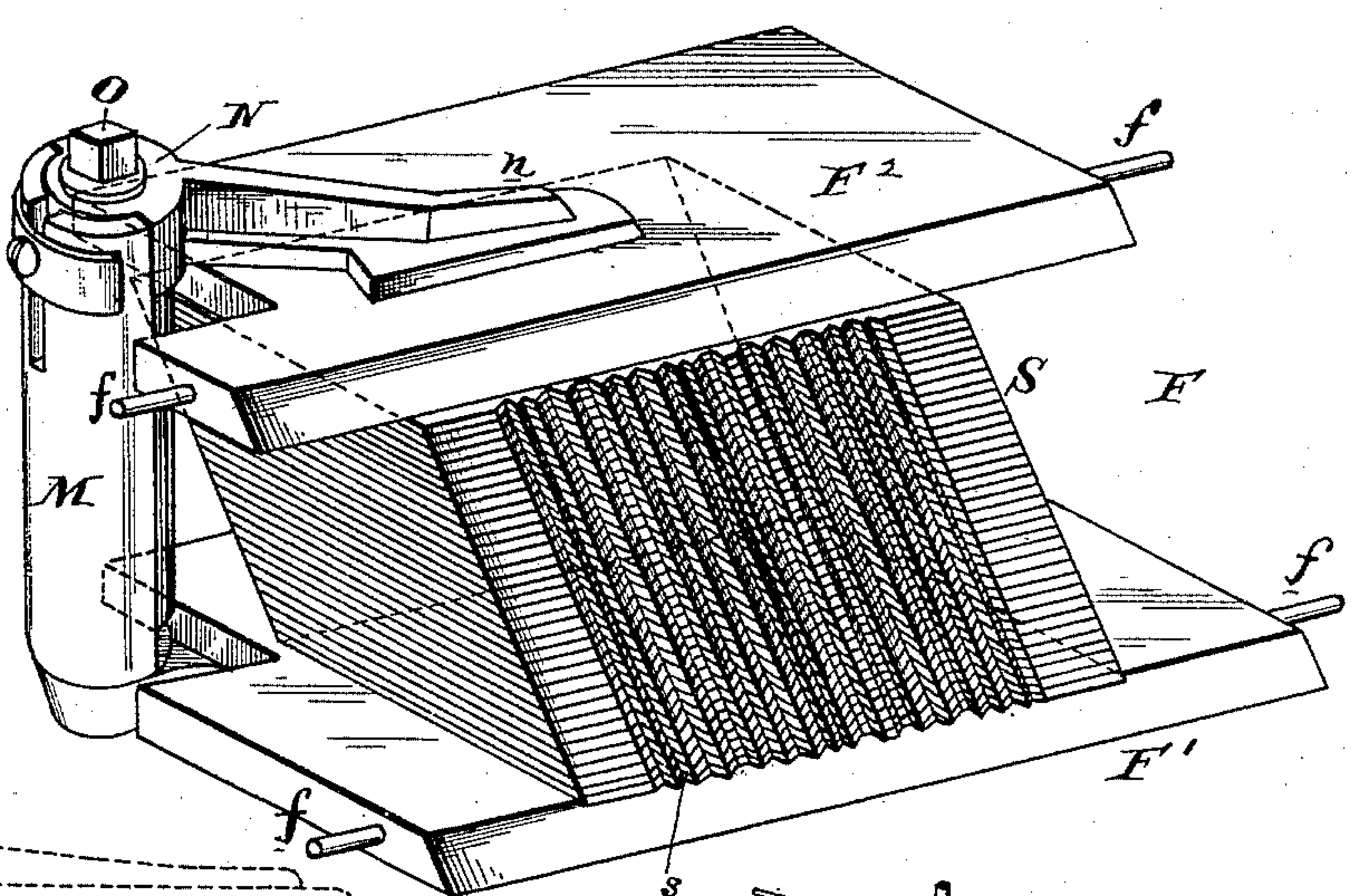


FIG. 6

Fig. 7.



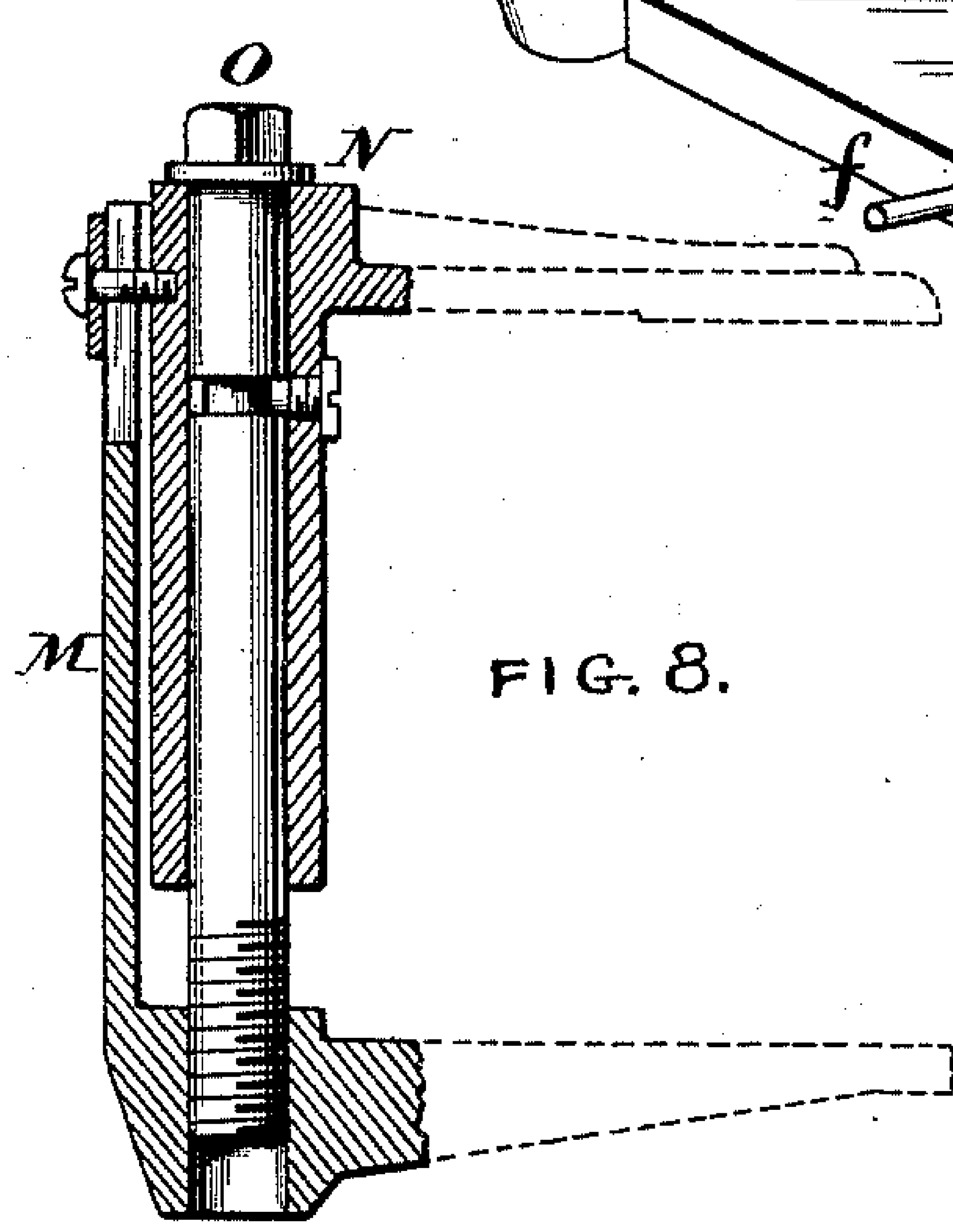


FIG. 8.

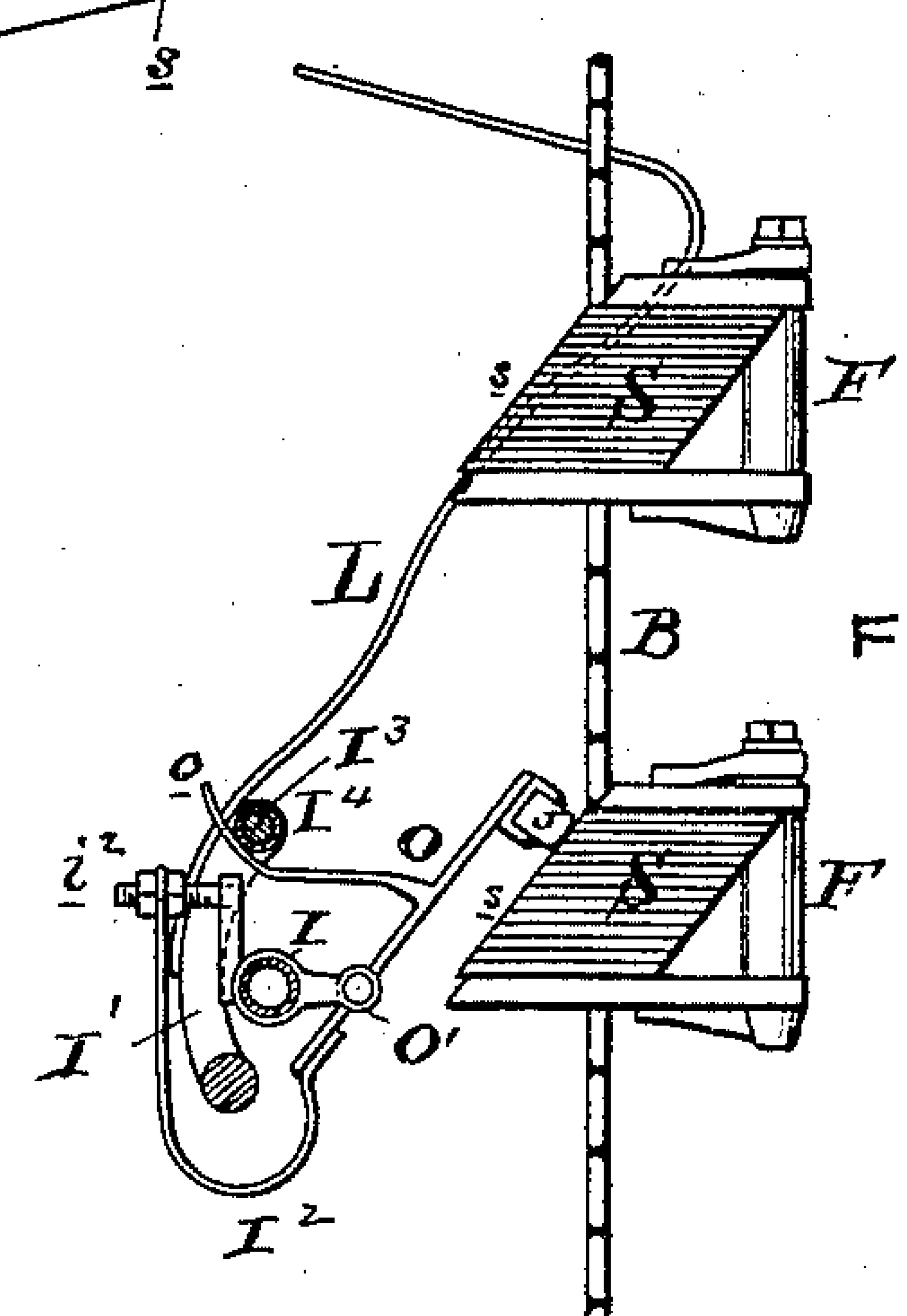


FIG. 9.

Witnesses:
Henry Drury
S. T. Yerkes

Inventor:
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By his atty
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UNITED STATES PATENT OFFICE.

CHARLES A. WRIGHT, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR TREATING CARDS.

SPECIFICATION forming part of Letters Patent No. 461,860, dated October 27, 1891.

Application filed January 20, 1891. Serial No. 378,416. (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, and especially adapted to gilding operations; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

This invention relates to improvements upon that class of machine set out in Letters Patent No. 413,995, granted to me October 29, 1889, wherein a series of card-clamps are conveyed past a given point at which the cards in the clamp are subjected to certain treatments.

My present improvement contemplates more especially the construction and operation of apparatus of a similar nature for the purpose of subjecting cards upon which gold-leaf has been previously laid to a burnishing operation.

My invention also comprehends certain improvents in a machine of this class relative to the means employed for drying sizing, with which the gold-leaf is secured to the edges of the cards in the clamps, and also to automatic mechanism for causing the cards to travel at a slow rate of speed while being burnished and at a high rate of speed during the travel of the cards to and from the burnishing mechanism.

My invention also comprehends certain automatic devices for arresting the carriers for the clamps after the completion of each burnishing operation, whereby the clamp may be removed and a fresh clamp inserted.

In the drawings, Figure 1 is a side elevation of a machine for treating cards embodying my invention. Fig. 2 is a front elevation of same, but with only a portion of the clamps indicated. Fig. 3 is an enlarged view of a portion of Fig. 2, showing more particularly the burnishing apparatus. Fig. 4 is a sectional elevation on line 1 2 of Fig. 3. Fig. 5 is a cross-section on line 3 4 of Fig. 3. Fig. 6 is a sectional plan view on line 5 6 of Fig. 3. Fig. 7 is a perspective view of one of the clamps removed from the machine and showing a bunch of cards clamped therein ready for being gilded. Fig. 8 is a sectional elevation of the metal work of the clamp; and Fig. 9 is a view similar to Fig. 4, showing a modified arrangement of my improvement.

A is the main frame of the machine and may be made of wood or metal. As shown, it consists of a general framing arranged between the ceiling and floor on account of cheapness. The particular construction of the frame-work of the apparatus is immaterial.

b are two shafts respectively arranged near the lowest and highest parts of the framing and sustained in suitable journal-boxes to support the wheels B, about which two endless chains or conveying devices D pass. The upper shaft *b* is rotated by worm and worm-wheel gearing C, the worm thereof being secured to a shaft E, which may be driven at a high or slow rate of speed by means of sprocket chains and wheels *e e'*, which parts are driven by wheels E^2 E^3 from a secondary shaft E', one of said wheels E^3 being adapted to drive the sprocket-chain *e*, which revolves the shaft E at a fast rate of speed, and the other of said wheels E^2 being adapted to drive the sprocket-chain *e'*, which rotates the shaft E at a slow rate of speed.

e^2 is a band for driving the wheels E^2 or E^3 alternately, and passes about said wheels at one end and at the other end about a pulley E^3, secured to a shaft e^3, upon which are arranged fast and loose pulleys E^4. About these latter pulleys passes the main power-band E^6. As shown in Fig. 1, this band E^6 is running about the loose pulley, but may be shifted to the left by the hand-shifter E^5 and held in said position by the spring e^5, so that the band travels about the fast pulley and rotates the power-shaft E^3. The belt e^2 may be shifted from the pulley E^3 to the pulley E^2, or vice versa, by means of a shifting-lever P, which is held by a spring *p* in position to cause the band e^2 to normally travel over the pulley E^3. The lower end of the shifting-lever P is provided with a cam projection P', which is automatically actuated by the conveyers at stated intervals, so that the band e^2 is shifted alternately upon the two pulleys E^2 and E^3.

F are card-clamps and are best shown in Sheet 3. These clamps consist of an upper board F^2 and a lower board F′, between which the cards S are placed, said cards having their edges previously arranged to form an oblique surface. The boards are clamped upon the cards by means of the metallic clamping devices. (Clearly shown in Figs. 7 and 8.) These clamping devices consist of a frame M, secured to the lower boards, a frame N, guided in the frame M and having an arm *n* extending out over the upper board F^2, and a clamping-screw O, carried in the frame N and screwing into the frame M. Each side of the boards F′ and F^2 may be provided with pins *f*, which pins on the lower board F′ rest in the supports *d* or the endless conveying-chains, and the pin or pins *f* on the upper board F^2 rest in supports *d′*, also secured upon the endless conveying-chains. The construction of these supports *d d′* is clearly shown in Fig. 4. After the cards have been placed in the clamp the pin of the board F^2 is inserted in the slot of the support *d′* and presses upward, and the pins of the lower board F′ are passed into the slot of the support *d*, and in that position the clamp is held and conveyed with the conveyers, so that the oblique faces of the cards S of the several clamps pass in a common plane in front of the apparatus by which they are to be treated.

G represents burnishing devices for burnishing the gold-leaf after the same has been laid upon the cards and waxed. The gold-leaf is laid upon the cards while the clamps are in or disconnected from the machine. When the clamps are inserted in place in the supports *d d′*, they are conveyed from the position indicated by the letter E^5 of Fig. 2 upward and over the machine and downward in front of a revolving drying-fan Q, which revolves about a vertical axis, and may be driven by a band passed about the pulley *q*. During the passage of the cards in front of this fan Q the sizing employed for securing the gold-leaf to the edges of the cards is dried, and as the clamps are again conveyed upward they are brought in front of the waxing brush or pad H (inclosed within a box H′ to prevent the escape of any gold-leaf which might be brushed off) and then conveyed to the burnishing apparatus G. The waxing-brush is rotated by a shaft *h′*; driven from the main shaft e^3 by a band H^2, and the shaft *h′* in turn rotates the brush or pad by means of bevel-gearing *h*. As the cards in the clamps ascend for being waxed and burnished the pins *f* of the clamps pass in front of vertical guides K, which are rigidly secured to the main frame of the machine in any suitable manner to prevent the lateral shifting of the card-clamps under the waxing and burnishing operations.

The burnishing apparatus consists of a laterally-reciprocating shaft I, supported in any suitable guides *i*, secured to the main frame of the machine, said shaft being reciprocated by a crank G′ upon the end of the main shaft e^3 and a pitman or connecting-rod *g* between the crank and the shaft I. Secured to the shaft I are brackets O′, to one part of which are pivoted the frames O, having rearwardly-extending parts *o*, and to the upper parts of which frames O are detachably secured the burnishing-agates J by means of clamps *j*.

I^2 are springs, one end of each of which is secured to the respective frames O, and the other end to the bracket O′ by an adjustable connection i^2, whereby one end of each of the springs is held rigidly with provision for adjustment, and the other end actuates the burnishing-tool to press toward the traveling cards with an elastic pressure. These burnishing-agates J are made with pointed noses, as shown in Fig. 6 when looking down upon them, and slightly-curved noses when looking laterally toward them, as shown in Fig. 5, so that at all times they may ride freely over the cards in both directions, and may also find ready access to the deepest grooves in the serrated edges of the cards, said serrations being indicated at *s* in Fig. 7. As shown, there are three agates and a similar number of supporting and actuating parts therefor; but it is evident that one or more may be employed, as desired, the particular number being immaterial to my invention. Pivoted at *i′* is an oscillating frame I′, having an upper transverse rod I^3, provided with a sleeve I^4, which, when drawn backward or to the left in Figs. 4 and 5, will strike the rearwardly-extending parts *o* of the frames O and move the burnishing-tools J away from the cards, compressing the springs I^2. This frame I′ is automatically oscillated by means of an extending arm L, which is arranged in the path of lateral projections *l* on the endless conveying-chains D, which projections strike the arm L and throw it outward at stated intervals, causing it to act upon the frames O in opposition to the springs I^2. The sleeve I^4 of the rod I^3 slips longitudinally upon the said rod and is mooved by a loose connection I^5, (shown in Fig. 3,) which is carried upon the reciprocating shaft I. In this manner the rear extensions *o* of the burnisher-holders are not materially worn, as they would be if they rubbed in contact with the rod I^3.

L′ is a stop secured to the main frame, and against which the arm L rests when not acted upon by the projections *l* of the chains. The projections *l* are adapted to move the arm L and its rod I^3, so as to cause the burnishing-agates to move away from the clamp as it passes upward in front of the burnishing-agates, and then release the said agates, so that they shall press upon the cards of the clamp and perform their work, and after having completely burnished the cards to cause said agates to be again moved away from the clamp, so as to pass beyond the lower board thereof. This operation takes place with the passage of each clamp, so as to pro-

tect at all times the burnishing-tool from injury, which would result if it were permitted to reciprocate and rub in contact with the edges of the boards as well as the edges of the cards. The shape of the arm L is such that in moving inward toward the conveyer its free end strikes the projection *l*, as indicated in Fig. 4, after the projections have passed above the sharply-bent portion of the arm L, so that the burnishing-agates are let in toward the cards in a more or less gradual manner. The same projections *l* on the endless conveyers which actuated the arm L also perform additional functions of moving the hand-shifter E^5 against the action of the spring e^5 to shift the pulley E^6 and arrest the action of the machine with each complete burnishing operation of a bunch of cards, and also the actuation of the shifting-lever P by striking upon the cam projection P′, so as to reduce the speed of the travel of the conveyers and the clamps held thereby during the burnishing operation, and whereby during the passage of the cards between the burnishing operation the conveyers move at a higher rate of speed. After the cards in a clamp have been burnished and the machine is automatically brought to rest the said clamp and its cards are removed, and another clamp containing cards is inserted in place of the one removed. The gold-leaf may be placed on the cards before or after the clamp has been placed on the conveyers. The hand-shifter E is then thrown from off the projection *l*, and the spring e^5 acts upon it and shifts the pulley E^6 to once more start up the machine. It will thus be seen that the machine will be arrested in its movement as often during each complete travel of the conveyers as there are separate clamps carried thereby. The automatic action of the shifter with the burnishing of each pack of cards may be dispensed with, if desired.

In practice I have found that if two supports *d* are employed for the pins *f* of the lever-boards F′ a single support *d′* alone is necessary for the pins *f* of each of the upper boards. The said supports merely convey the clamps, while the lateral resistance during the burnishing operation is performed by the guides K.

While I prefer to arrange the card-clamps so that the cards have their edges arranged in the same plane as indicated in Figs. 1 and 4, I do not confine myself to that arrangement, as the cards may be arranged as shown in Fig. 9, and the burnishing-tool in this case is let in, so as to reach the uppermost cards and gradually recede from the conveyers as the cards ascend. In this construction the same parts are employed as in the other or preferred construction.

The particular means for conveying the cards is immaterial so long as said cards while held in their clamps are conveyed successively past the burnishing-tool. For instance, in place of using endless chains and sprocket-wheels the card-clamps may be supported upon a wheel or circular conveyer, as indicated in Fig. 15 of my patent hereinbefore referred to.

While I prefer the constructions herein shown, I do not limit myself to the details thereof, as they may be modified in various ways without departing from the principles of my invention.

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 power-actuated burnishing-tool having a combined movement to or from and parallel to the card-clamp, whereby the burnishing-tool may move away from the card-clamp until the cards are under it, and then reciprocate in contact with the edge of the cards.

2. In a machine for treating cards and similar articles, an endless carrier, in combination with a series of card-clamps carried or conveyed thereby, a burnishing-tool having a combined movement to or from and parallel to the card-clamp, whereby the burnishing-tool may move away from the card-clamp until the cards are under it and then to reciprocate in contact with the edges of the cards, and a part movable with the endless carriers for finally moving the burnishing-tool away from the clamps immediately upon completion of the burnishing operation of the cards.

3. In a machine for treating cards and similar articles, an endless carrier or conveyer and one or more card-clamps carried or conveyed thereby, in combination with a laterally-vibrating burnishing-tool arranged on 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 the burnishing-tool against the edges of the cards, a movable frame adapted to move the burnishing-tool away from the cards in opposition to the spring, and projections on the endless carrier or conveyer for operating the movable frame.

4. In a machine for treating cards and similar articles, a conveyer for conveying successive card-clamps past a given point, in combination with one or more card-clamps and a burnishing apparatus for burnishing the cards while being conveyed, consisting of a reciprocating frame to which is pivoted an arm O, having a rearward extension *o*, a burnishing-tool J, clamped to the frame O, a spring I^2, acting upon the frame O at one end and connected at the other end with the reciprocating frame, a pivoted frame I′, having a transverse rod I^3 for acting upon the extension *o* to move the burnisher away from the cards, and an arm L, adapted to be actuated by projections upon the conveyer to actuate the said frame I′.

5. In a machine for treating cards and simi-

lar articles, a conveyer for conveying successive card-clamps past a given point, in combination with one or more card-clamps and a burnishing apparatus for burnishing the cards while being conveyed, consisting of a reciprocating frame to which is pivoted an arm O, having a rearward extension *o*, a burnishing-tool J, clamped to the frame O, a spring I^2, acting upon the frame O at one end and connected at the other end with reciprocating frame, a pivoted frame I′, having a transverse rod I^3 for acting upon the extension *o* to move the burnisher away from the cards, an arm L, adapted to be actuated by projections upon the conveyer to actuate said frame I′, and means to adjust the tension of the spring I^2.

6. In a machine for treating cards and similar articles, a carrier or conveyer for moving a card-clamp past a given point, in combination with one or more card-clamps moved by or with said conveyer, and a laterally-reciprocating burnishing-tool for treating the cards held in the clamp, and in which the operating edge of said burnishing-tool is made V-shaped in plan and slightly curved or convex in side elevation.

7. In a machine for treating cards and similar articles, an endless carrier or conveyer having thereon slotted supports *d d′*, substantially as shown, in combination with one or more clamps having pins *f*, adapted to be received in the slots of the said supports.

8. In a machine for treating cards and similar articles, the combination of a conveyer or carrier, a series of card-clamps movable therewith, power mechanism for moving the conveyer or carrier, speed-controlling mechanism for changing the speed of the conveyer or carrier intermittently, and devices for treating cards while being held in the clamps during the slow speed of the conveyer.

9. In a machine for treating cards and similar articles, the combination of a conveyer or carrier, a series of card-clamps movable therewith, power mechanism for moving the conveyer or carrier, speed-controlling mechanism for changing the speed of the conveyer or carrier intermittently, devices for treating cards while being held in the clamps during the slow speed of the conveyer, stop-motion mechanism consisting of a shifting part for arresting the operation of the conveyer or carrier, and a projection on the said conveyer or carrier for automatically operating the shifting mechanism to arrest the motion of the carrier or conveyer.

10. In a machine for treating cards and similar articles, the combination of a carrier or conveyer for moving clamps containing cards successively past a given point, a reciprocating burnishing-tool arranged to act upon the cards in the clamps, one or more card-clamps conveyed by said conveyer or carrier, power mechanism for reciprocating the burnisher and also moving the conveyer, and automatic stop-motion mechanism controlled by the conveyer for arresting its motion and the motion of the reciprocating burnishing-tool at stated intervals.

11. In a machine for treating articles, the combination of a conveyer or carrier, one or more card-clamps adapted to be conveyed by said conveyer or carrier, a burnishing-tool adapted to act upon the cards in the clamps while being conveyed, power mechanism to reciprocate the burnishing-tool and move the carrier, stop-motion mechanism for arresting the aforementioned parts, provided with a hand-operated lever, and a projection on the conveyer or carrier for automatically moving the hand-lever to arrest the motion of the conveyer and burnishing-tool.

12. In a machine for treating cards and similar articles, the combination of an endless carrier or conveyer, a series of detachable card-clamps carried thereby, a burnishing-tool arranged at one place before which the card-clamps are conveyed, and a drying-fan arranged at another place before which the clamps and their cards are conveyed before passing to the burnishing-tool.

13. In a machine for treating cards and similar articles, the combination of endless-chain carriers passing over guides at top and bottom widely separated, a series of detachable card-clamps carried by said carriers or conveyers, a burnishing-tool arranged at one place for treating cards during their passage, and a drying-fan arranged to revolve on an axis parallel to the travel of the card-clamps during their passage.

14. The combination of wheels arranged near the ceiling and near the floor, endless conveying or carrying chains passed about said wheels, and card-clamps detachably connected with said chains or conveyers, in combination with the vertically-arranged rotating drying-fan Q.

15. In a machine for treating cards and similar articles, the combination of two endless chains D, each of which is provided with a series of slotted supports *d*, substantially as shown, and one of said chains being provided with a series of deeply-slotted supports *d′*, arranged alternately with the supports *d* and having the open end of the slots direct toward the corresponding support *d*, and card-clamps having pins *f*, adapted to fit into the slots of the supports to hold the card-clamp in position while being conveyed.

16. In a machine for treating cards, the combination of a conveyer, a series of card-clamps carried thereby and adapted to hold packs of cards so as to present their edges to be treated in parallel planes, and a vibrating burnisher arranged at one place and past which the clamps are carried, the said burnisher being provided with a movable burnishing-tool elastically pressed toward the card-clamps and free to move laterally with respect to its vibratory movement to follow the surface of the cards held in the clamps.

17. In a machine for treating cards, the com-

bination of a conveyer, a series of card-clamps carried thereby and adapted to hold packs of cards so as to present their edges to be treated in parallel planes, a vibrating burnisher arranged at one place and past which the clamps are carried, the said burnisher being provided with a movable burnishing-tool elastically pressed toward the card-clamps and free to move laterally with respect to its vibratory movement to follow the surface of the cards held in the clamps, and a movable part acted on by the conveyer to support said burnishing-tool away from the carrier during the interval between the passage of two successive clamps.

18. In a machine for treating cards, the combination of a conveyer, a series of card-clamps carried thereby and adapted to hold packs of cards so as to present their edges to be treated in parallel planes, a vibrating burnisher arranged at one place and past which the clamps are carried, the said burnisher being provided with a movable burnishing-tool elastically pressed toward the card-clamps and free to move laterally with respect to its vibratory movement to follow the surface of the cards held in the clamps, a movable part adapted to act upon the burnishing tool when moved in one direction and not in the other direction, projections carried by the conveyer to operate said arm to control the movement of the burnishing-tool toward the card-clamps, and a spring to press the burnishing-tool against the cards when released by the movable part.

In testimony of which invention I have hereunto set my hand.

CHARLES A. WRIGHT.

Witnesses:
ERNEST HOWARD HUNTER,
JOHN A. BRAMLEY.