

(Model.)

5 Sheets—Sheet 1.

M. L. DEERING.

HORIZONTAL HOOP DRIVING MACHINE.

No. 257,130.

Patented Apr. 25, 1882.

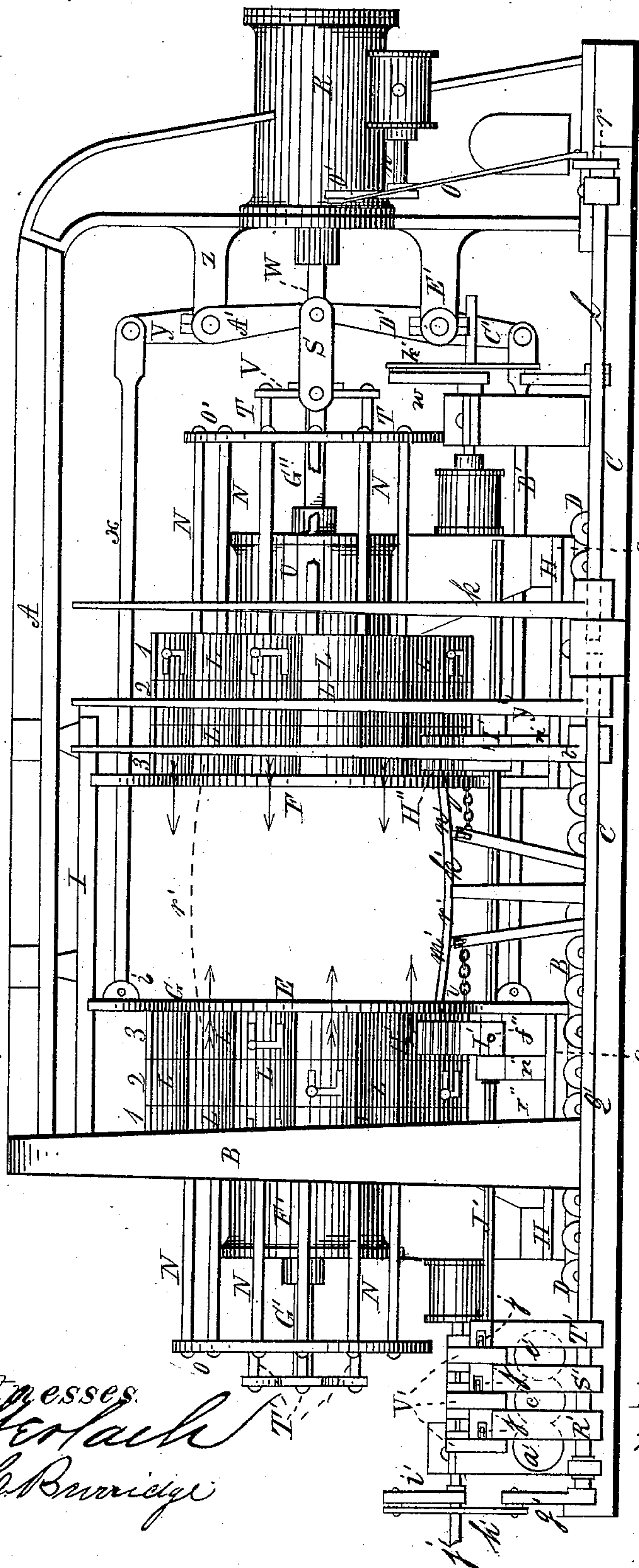


FIG. 1.

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(Model.)

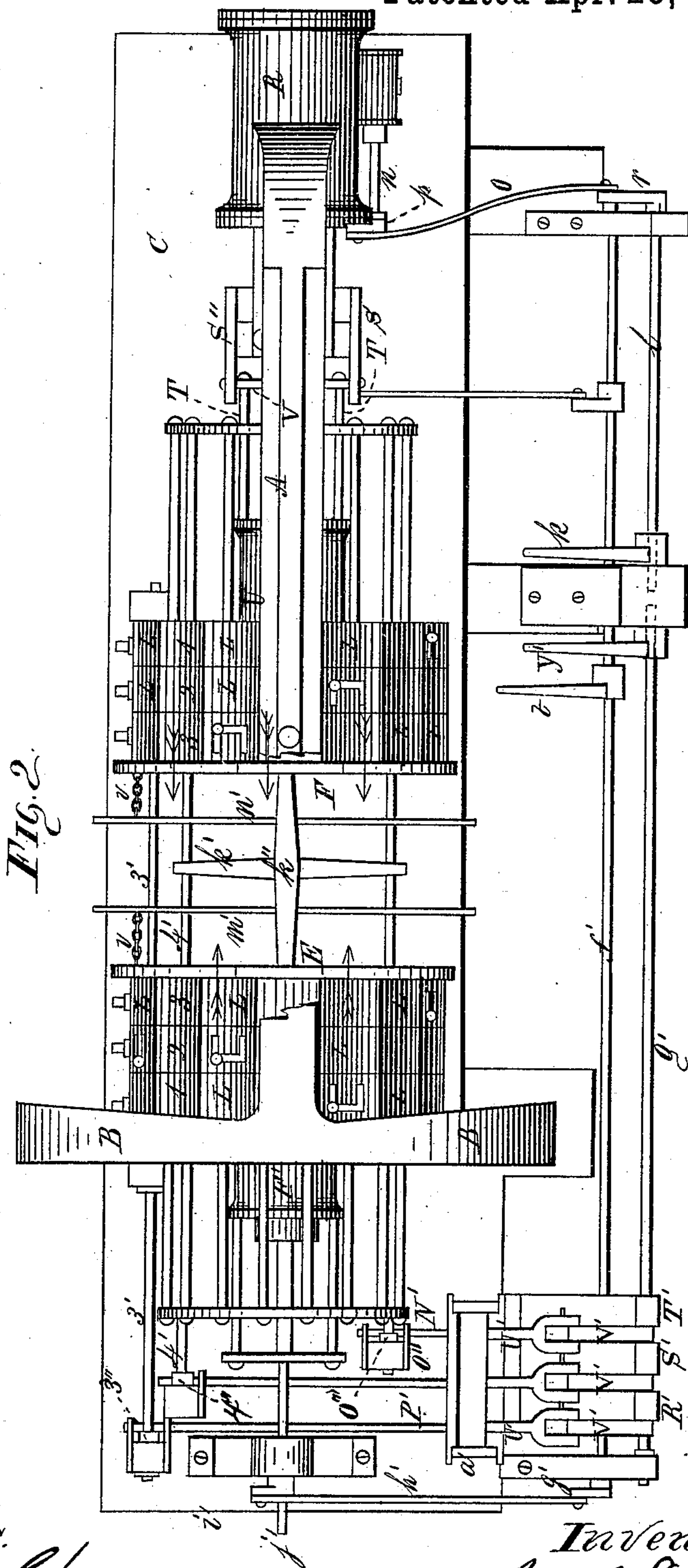
5 Sheets—Sheet 2.

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FIG. 3.

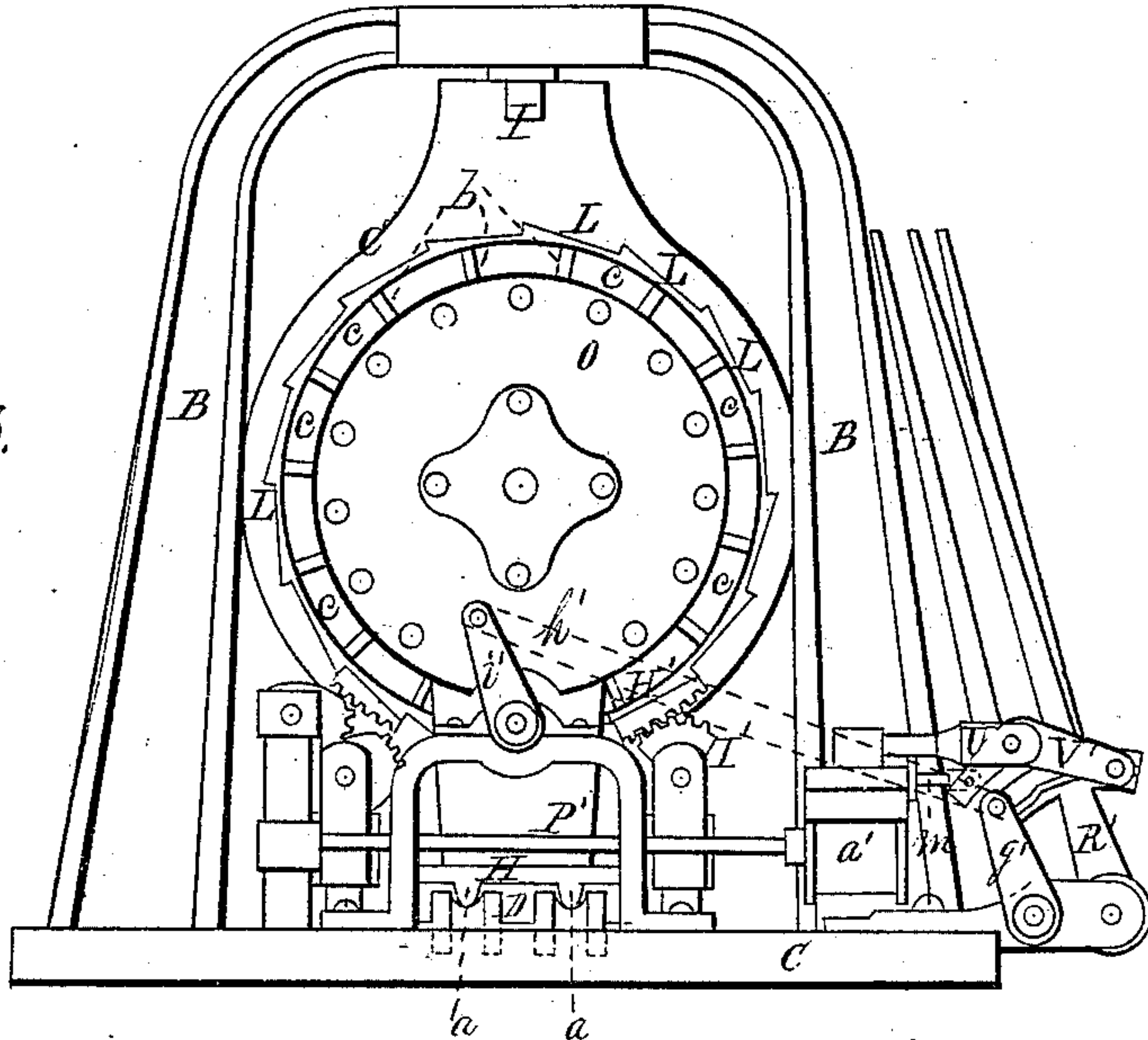


FIG. 4.

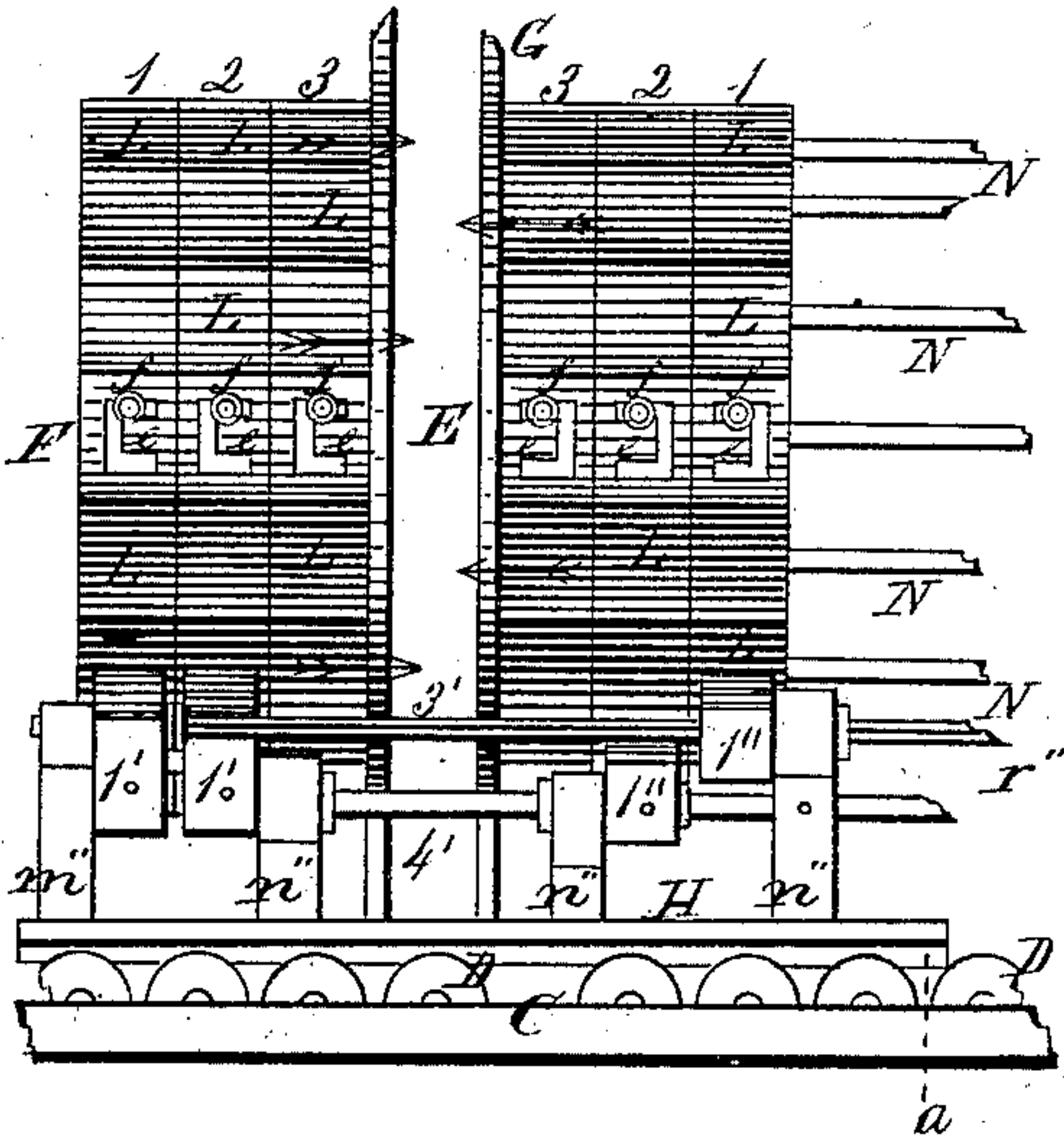
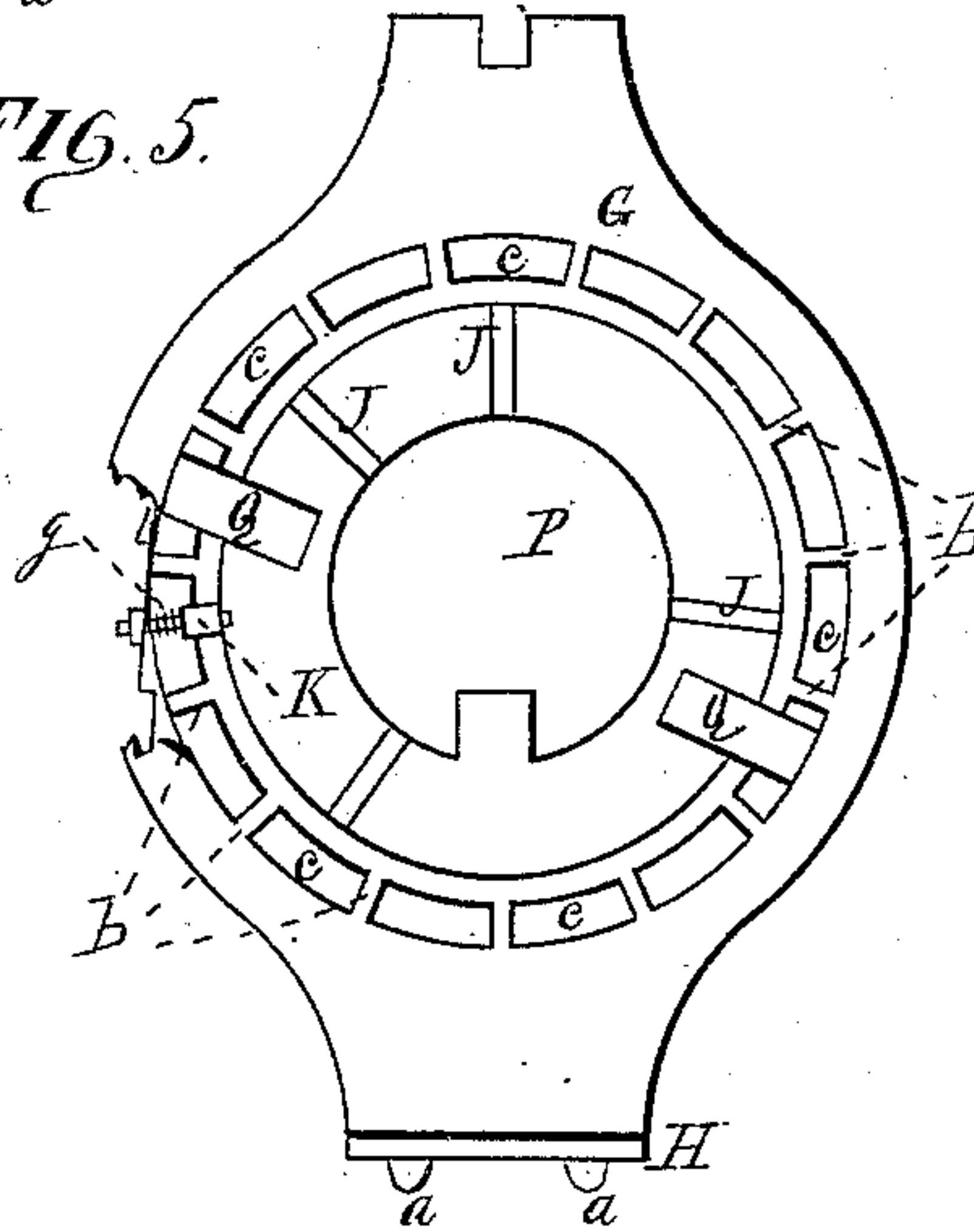


FIG. 5.



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FIG. 6

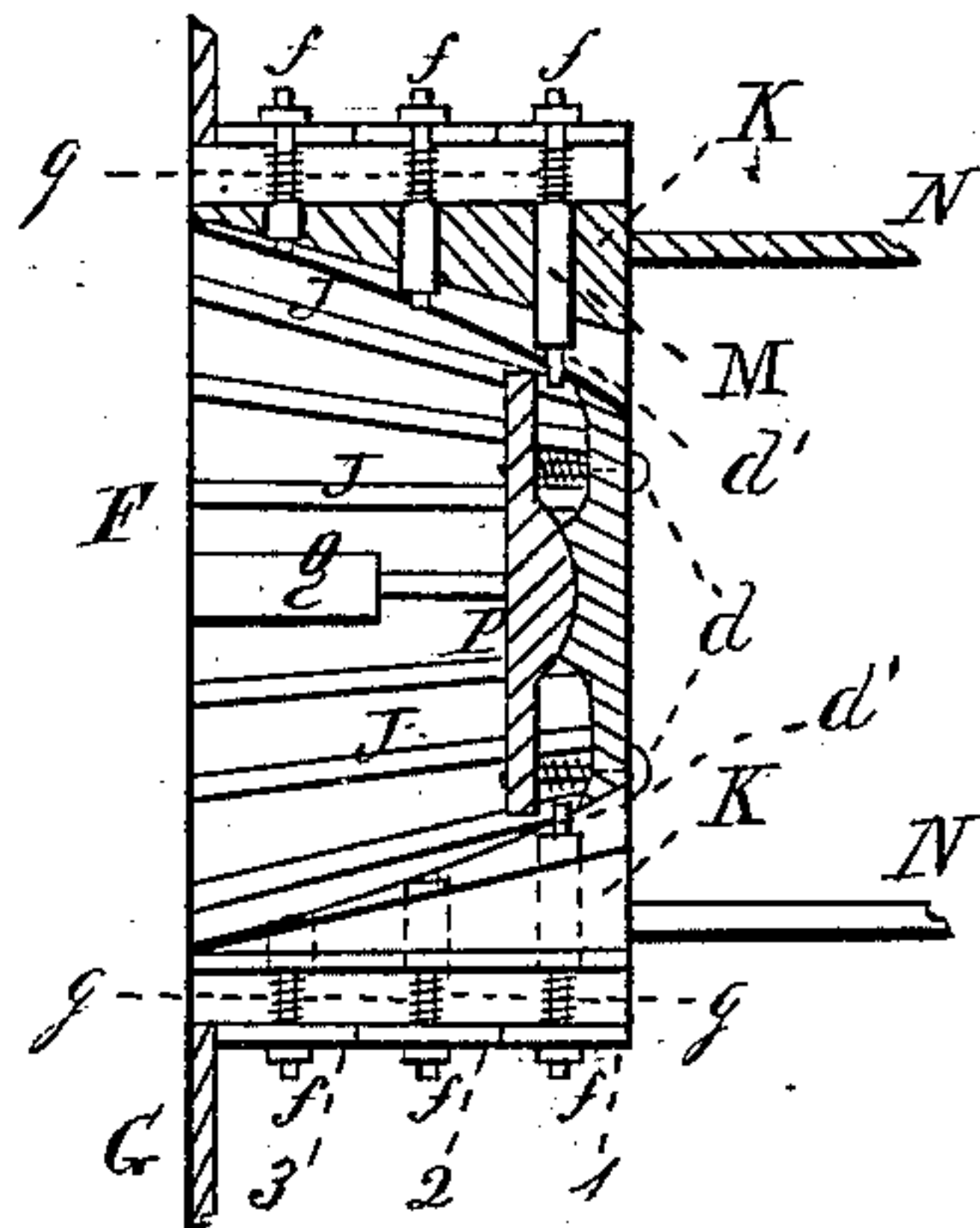


FIG. 7



FIG. 8.

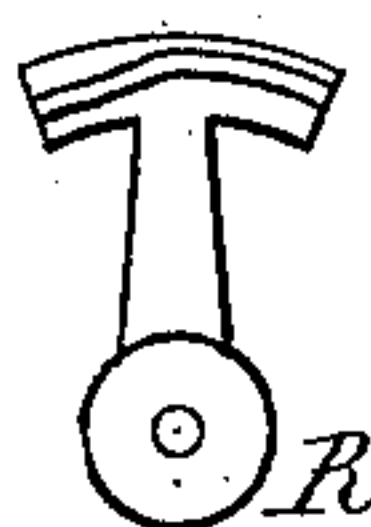


FIG. 9.

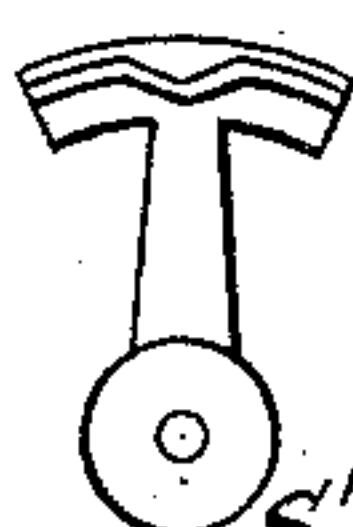


FIG. 10.

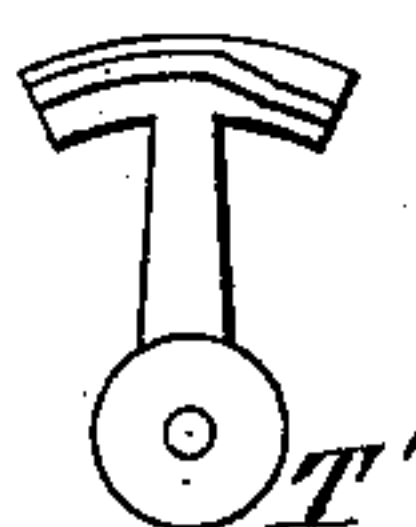


FIG. 11

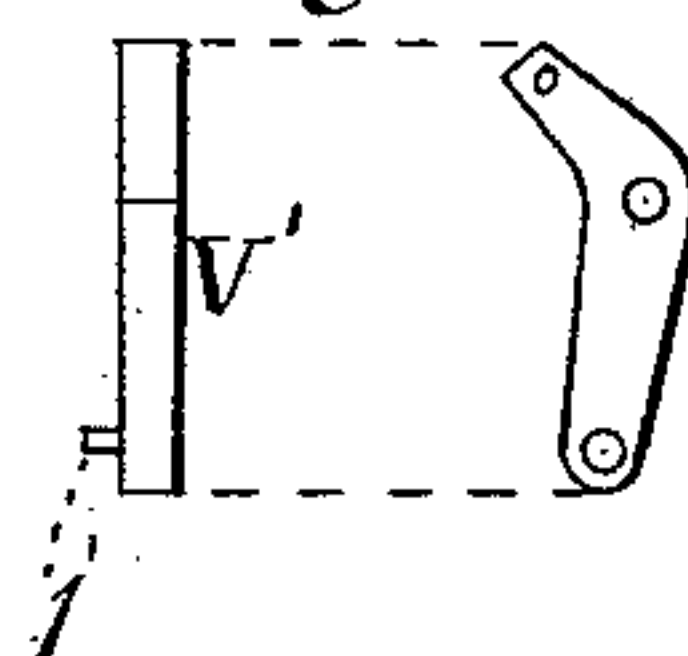
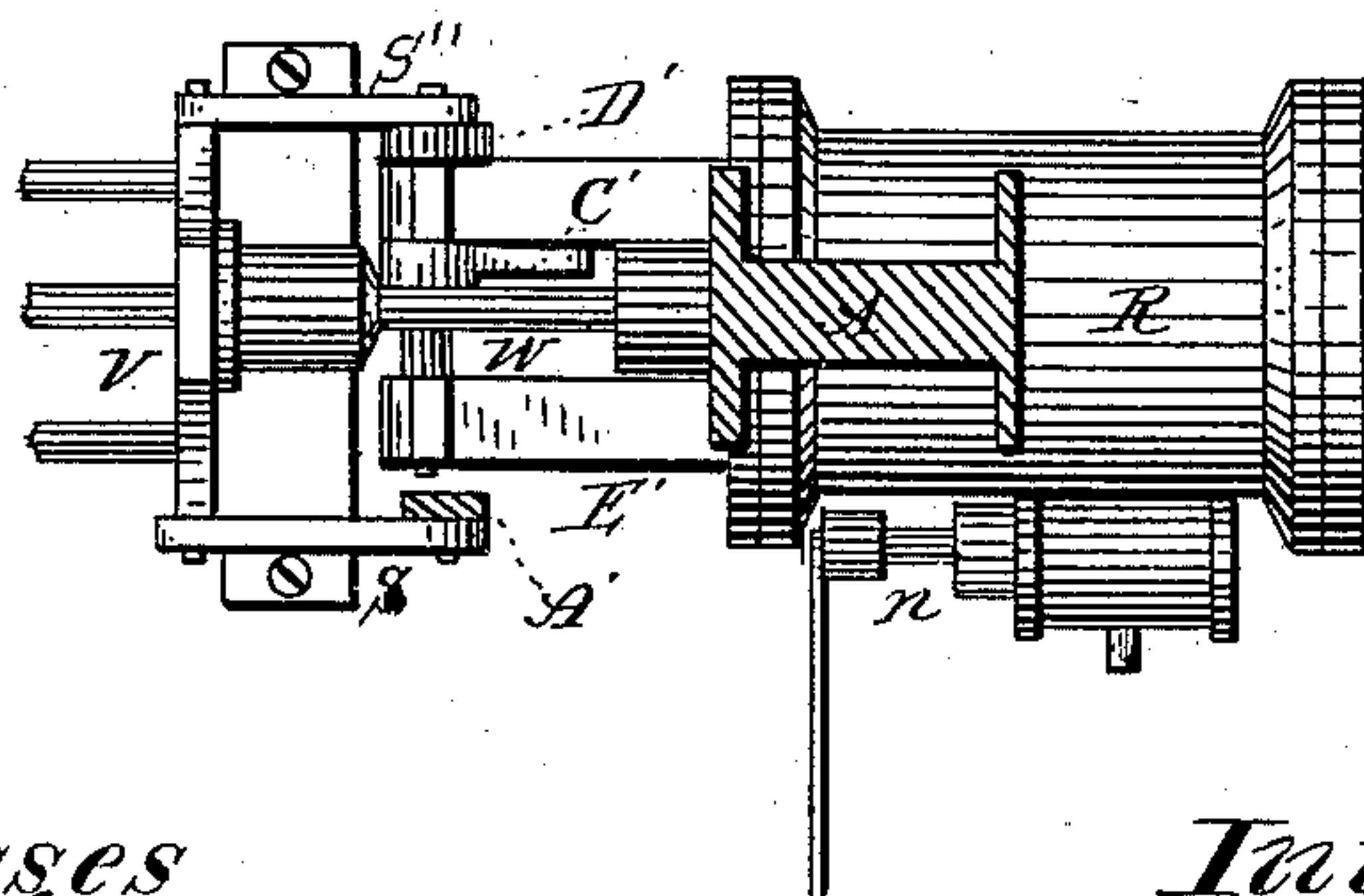


FIG. 12.



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Fig. 13.

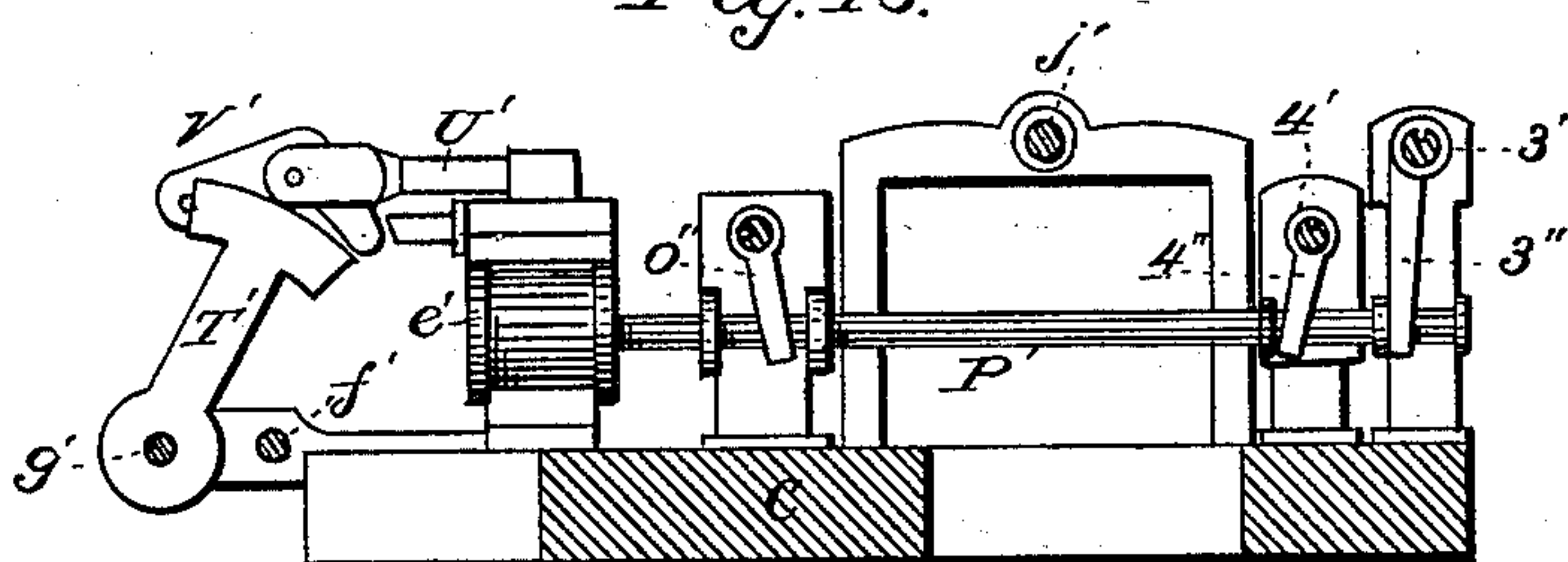


Fig. 15.

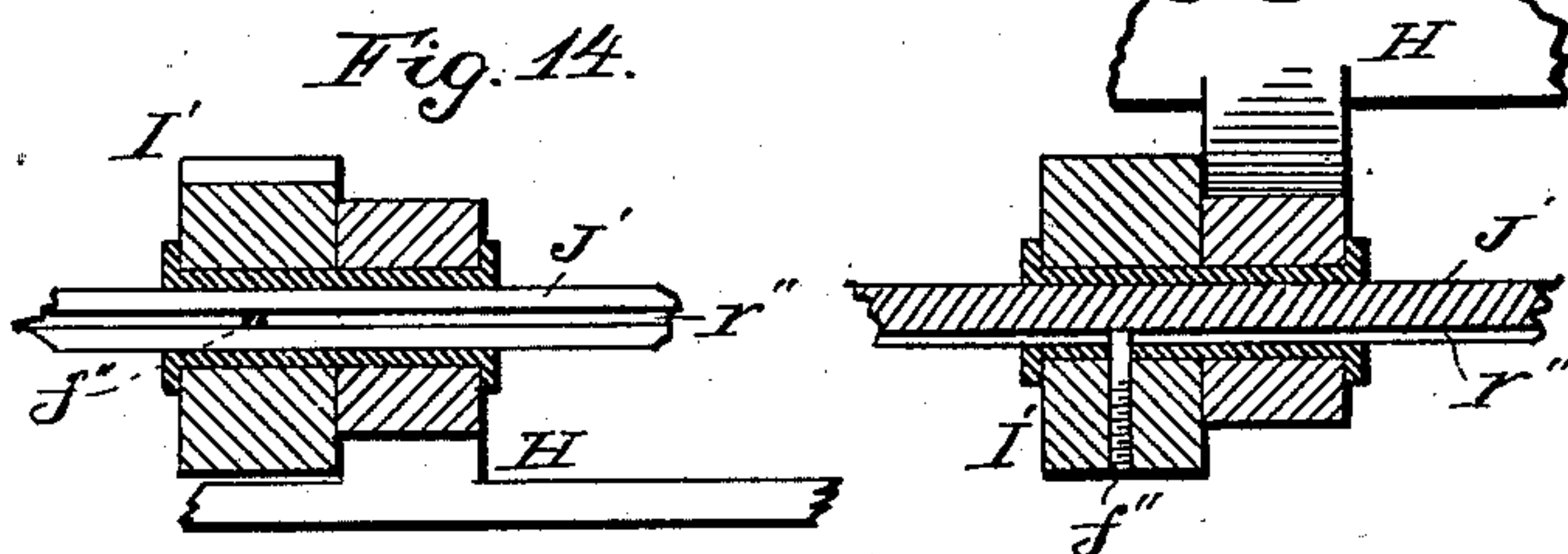
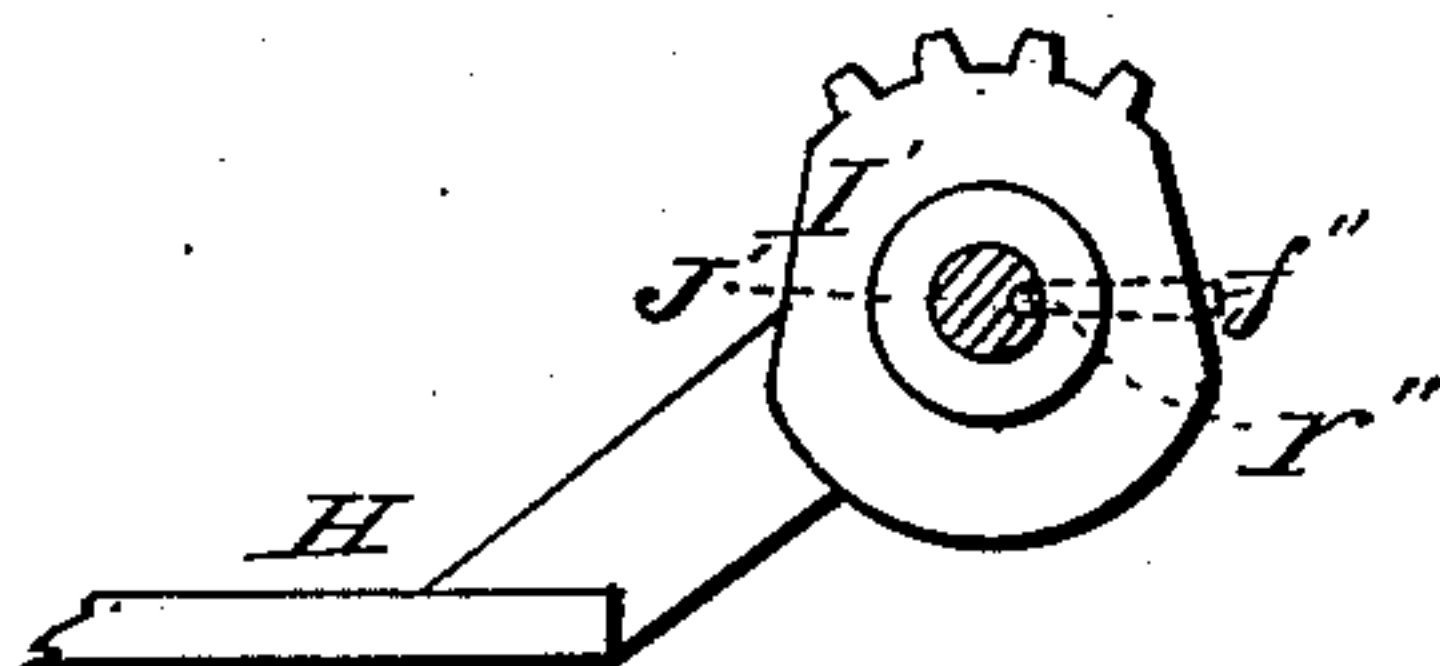


Fig. 14.

Fig. 16.



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UNITED STATES PATENT OFFICE.

MARK L. DEERING, OF CLEVELAND, ASSIGNOR TO GEORGE H. HOPPER,
OF UNIONVILLE, OHIO.

HORIZONTAL HOOP-DRIVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 257,130, dated April 25, 1882.

Application filed November 21, 1881. (Model.)

To all whom it may concern:

Be it known that I, MARK L. DEERING, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Horizontal Hoop-Driving Machine; and I do hereby declare that the following is a full, clear, and complete description thereof.

The purpose of this invention is for driving hoops on barrels, or, more particularly, for tightening by redriving the hoops on the barrels after they have been driven originally thereon, so that said barrels may be tight and free from leakage for final shipment or for storage.

A full and complete description of the construction and practical operation of the hoop-driver is substantially as follows. For illustration thereof reference will be made to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a plan view. Fig. 3 is an end elevation. Fig. 4 is a detached sectional side view of the machine. The rest of the figures are detached detail sections, to which reference will be made.

Like letters of reference refer to like parts in the several views.

In a suitably-constructed frame, consisting of the beam A and standards B, Figs. 1 and 3, of which C is the bed-plate of the said frame, are arranged the mechanisms of the machine in the following order: Longitudinally in the middle of the bed-plate is a rectangular opening extending nearly the length of the bed-plate. Transversely in said opening, and journaled in the sides thereof, are a series of friction-rollers, D, Figs. 1 and 3, upon which rest and move longitudinally and reciprocally in a horizontal direction a pair of receiving-heads, E and F. Said heads are constructed alike. Hence a description of one of them will answer for the other.

The retaining-head F consists of a shell the inner surface of which is plain and in contour the shape of a transverse half of a barrel, and of a proper size to receive a little less than one-half of the length of a barrel, as seen in Fig. 6. The front edge of the shell is provided with a flange, G. A section of the lower edge

of the flange projects downward, forming a foot for connecting the retaining-head to a carriage, H, resting directly upon the rollers above referred to, and upon which the retaining-head is carried upon the said rollers. Along the under side of the carriage are ribs, a, Figs. 4 and 5, adapted to fit in the peripheral grooves of the rollers, as seen in Fig. 3, for guiding the movement of the retaining-heads. A section of the upper edge of said flange G extends upward, that it may engage the guide-bar I, Figs. 1 and 3, whereby the upper side of the retaining-head is held in position and guided in its reciprocal movements.

The exterior surface of the shell of the retaining-head is provided with a series of ribs, b, Figs. 3 and 5, which may be more or less in number, running lengthwise the said head, between which are corresponding spaces, c.

Through the sides of the shell of the retaining-head, and between the ribs, are cut a corresponding number of slots, J, in each of which is fitted a slide, K, Figs. 5 and 6. A detached view of one of said slides is shown in Fig. 7. All the slides are not shown in the drawings. Further attention will be called to this part of the machine hereinafter.

1, 2, and 3 are rings placed on over the shell, fitting closely to the ribs b alluded to, but loose enough to turn freely thereon reciprocally. The peripheral face of each of said rings is divided into a series of inclined planes or cams, L, Figs. 3 and 4, corresponding to the number of spaces c above alluded to. In each of said inclined planes or cams is cut an L-shaped slot or opening, e, as seen in Fig. 4. All the inclined planes or cams of the rings are not shown with slots therein, but practically each one is thus slotted.

M, Fig. 6, are drivers the bodies of which, passing loosely through the slide K, are square to prevent their turning around. The inner end of each driver terminates in a rounded point, d'. The shank, or that part of the driver passing through the space c and through the slot in the cam-ring, is round, and is terminated by a collar or head, f, outside of the ring, as shown in Figs. 4 and 5.

Around the shank of the driver is coiled a spring, g, Figs. 5 and 6, the tension of which

forces the driver radially inward toward the center of the retaining-head, but which is prevented from falling therein by said collar *f*.

Each of the slides *K* is alike provided with three drivers the shanks of which pass respectively through the slots of the cam-rings, as shown in Fig. 6. Each of the slides *K* is provided with a rod or stem, *N*, whereby they are attached to a disk, *O'*, Figs. 1 and 3, for operating the slides simultaneously, as and for a purpose presently shown.

In the bottom end of the retaining head or heads is an abutment-plate, *P*, Figs. 5 and 6. Said plate is a little larger in diameter than the head of a barrel, and is pivoted in the retaining-head by a ball-and-socket joint held in place by bolts and springs *d*, Fig. 6, which admits of sufficient movement of the plate to adapt itself to any irregularity of the barrel.

Within the retaining-head are a number of flat springs, *Q*, Figs. 5 and 6. Two only are shown in the drawings. Practically more are used. Said springs extend convergingly inward toward the plate *P*, and circumferentially are uniformly arranged. The inner ends of said springs may be re-enforced by supplementary springs coiled around thrust-bolts, on which the main springs may rest. The purpose of these springs will presently be shown.

As above said, the two retaining-heads are constructed and arranged substantially alike, and are made to approach each other simultaneously and to recede from each other simultaneously, the extent of their travel being equal, each one moving a little less than one-half the length of a barrel.

The devices for effecting the movement of the retaining-heads are as follows:

R is a steam-cylinder, herein designated as a "retaining-cylinder." Said cylinder is provided with a piston-rod, valves, &c., in the same way as an ordinary steam-engine cylinder, differing only from that in adapting it and its steam-pipes to this special machine. Hence a detailed description thereof is not deemed essential in this place. The retaining-head *F* is actuated directly by the retaining-cylinder *R*, the piston-rod of which is connected to said head by means of a head, *V*, and rods *T*, Figs. 2 and 1. One end of each of said rods is secured in the head of the cylinder *U* of a driving-cylinder connected to the said retaining-head *F*. The other ends of the guide-rods are secured in a head, *v*, which in turn is attached to the piston-rod *W*, Fig. 1, of the retaining-cylinder *R*, thereby making a positive and direct connection of the retaining-head *F* with the retaining steam-cylinder *R* for operating the head conjointly with the retaining-head *E*. Said retaining-head *E* is connected to the retaining-cylinder and operated thereby as follows:

X, Fig. 1, is a connecting-rod one end of which is connected to the top of the retaining-head *E*, as seen at *i*. The opposite end of the rod is attached to an arm, *y*, secured to a shaft journaled in a bracket, *Z*. To said shaft is se-

cured an arm, *A'*, whereby the shaft is connected to the link *S*, pivoted to the head *V* of the retaining-cylinder. The lower side of the retaining-head is in like manner connected by a rod, *B'*, to the link *S'*, Figs. 1 and 12, of the retaining-cylinder by the intervention of an arm, *C'*, and an arm, *D'*, both of which are secured to a shaft journaled in a bracket, *E'*, Figs. 1 and 12.

From the above-described connections of the two retaining-heads with the retaining-cylinder it will be obvious that said heads will be operated reciprocally in a longitudinal direction and simultaneously by the said cylinder.

The driving steam-cylinder *U* above referred to is connected rigidly and permanently to the retaining-head *F* and in a true central relation therewith. The retaining-head *E* has also a driving steam-cylinder, *F'*, Fig. 1, rigidly and permanently connected thereto, and having the same central relation to the head *E* and to the head *F* and retaining-cylinder *R*, all of which have and move in a common central line.

The above-said driving steam-cylinders are constructed substantially as an ordinary steam-engine cylinder, modified simply to adapt them to this special purpose—viz., for operating the slides *K*, carrying the hoop-drivers *M* above alluded to. Said slides are connected to the heads *O O'*, respectively, by the rods *N*, and said heads are respectively connected to the piston-rods *G'* and *G''* of the driving-cylinders *U* and *F'*, as shown in Figs. 1 and 2, in which *T* and *T'* are the guide-rods on which said heads *O O'* are guided and controlled, as aforesaid.

To the cam-rings 3 and 3, Fig. 1, of the retaining-heads are secured respectively racks *H' H''*. On the shaft *J'* are segment-gears *I'*, arranged to engage the said racks, as shown in Figs. 1 and 3, for rotating the rings. All the other cam-rings of the two retaining-heads are alike provided with a rack and a segment-gear for actuating them, as shown in Figs. 3 and 4, in which 1' and 1'' are the racks and segment-gears, and 3' and 4' are the shafts to which the segments are feathered. The said segment-gears are free to slide on their respective shafts, that they may move together with the retaining-heads, but are prevented from turning on their shafts by being feathered thereto in the ordinary way.

In Fig. 1 *r''* indicates the groove in the shaft, and *f''* the feather above alluded to. Said pinions or segments are moved together with the retaining-heads by the arms *n''*, secured to and projecting from the bed-plate of the said heads, and through which the shaft *J'* passes in a sleeve on which the segments turn, and are carried thereby in one direction and by the arm *n''* in the opposite one as the retaining-heads may move.

The cam-ring on one head is rotated conjointly with the corresponding ring on the other head. A special steam-cylinder is adapted to actuate the two corresponding rings, said cyl-

inders being shown at a' , c' , and e' , Figs. 1 and 3, and are constructed with piston-rods, valves, and steam-pipe connections, substantially as an ordinary steam-engine cylinder, modified therefrom only so much as to adapt them to work the several parts of the machine to which they are connected respectively.

The rock-shafts J' , $3'$, and $4'$, carrying the segment-gears above described, are connected respectively to the piston-rods N' , O'' , and P' , Figs. 2 and 3, by lever-arms $3''$, $4''$, and O''' , Fig. 2, fixed to said shafts, but loosely connected to the piston-rods of the cylinders, so that as the pistons work they will vibrate the arms and rock the several shafts and segment-gears thereon, which by their engagement with their respective racks will rotate reciprocally and simultaneously the cam-rings on the two retaining-heads.

The steam is let on and shut off from the several cylinders for operating the cam-rings by the following device: On the shaft Q' , Fig. 2, are fixed the T-shaped arms R' , S' , T' , Figs. 1, 2, and 3. In the side of the head of each of the arms is cut a groove, as seen in Figs. 8, 9, and 10, which represent detached views of the arms. The arms 8 and 10 are the two outside arms and have the groove in the head alike, only in a reverse direction. Fig. 9 is the middle arm, and the groove in the head differs from those in the side arms. The peculiar shape of the grooves is for a special purpose, hereinafter explained.

Above each of the cylinders a' , c' , and e' al-
luded to projects a bifurcated arm, U' , Figs. 2 and 3, in which are pivoted respectively the levers V' , detached views of which are shown in Fig. 11, so arranged that the outer ends thereof are in contact with the sides of the heads of the T-shaped arms, and are in connection with the said arms by a pin, j , Fig. 1, projecting from the end of the lever into the grooves of the arms, as seen in the drawings. The opposite ends of said levers are connected to the ends of the valve-rods m , Fig. 3, of the steam-cylinders for operating the valves thereof, which, as above mentioned, actuate respectively the cam-rings of the retaining-heads.

For operating the several valves of the cylinder for the purpose above specified is the object of the handle Y' , fixed on the shaft Q' , carrying the T-shaped arms above described.

The valve of the retaining-cylinder R is operated for moving the retaining-heads by the handle k , Fig. 2, secured to the shaft l , said shaft being connected to the valve-rod n by a link, O , attached to crank-arms p and r , fixed respectively on the valve-rod and shaft, substantially as shown in said Fig. 2. The two driving-cylinders F' and U are in like manner controlled for operating the drivers by the handle t , secured to the shaft f' , Fig. 2. On the outer end of said shaft is a crank-arm, g' , to which is attached a connecting-rod, h' . The opposite end of the rod is attached to a crank-arm, i' , on the valve-rod j' of the driv-

ing-cylinder F' , substantially as shown in Figs. 1 and 2.

Between the two retaining-heads is fixed to the bed of the machine a frame or stand, k' , on which is secured a plate, k'' , Fig. 2, onto which the barrel is rolled and supported between the heads, while apart, for having the hoops tightened thereon.

On each side of the stand, and just below the plate k'' , but not so close as to touch, is a supplementary supporting-frame, m' and n' , the legs of which are pivoted to the bed-plate near the foot of the middle support, k' , so that the upper part of the frames may be spread outward, as seen in Fig. 1, to give a resting-surface for the barrel to roll on into the machine. The side supports, for being hinged to the bed-plate, will close together and be no obstruction to the heads when they approach each other for operating on the barrel, which is substantially as follows:

The barrel above referred to is indicated by the dotted lines r' in Fig. 1, and is represented as being partly within the retaining-heads.

As aforesaid, this machine is for retightening the hoops on barrels which may have become loose thereon, and is especially intended for resetting the hoops on oil-barrels which are bound with three hoops on each end corresponding to the number of cam-rings and hoop-drivers M set in the slides or driver-heads K herein described.

The barrel to be hooped is placed in the machine by being rolled over suitable tracks or ways (not shown in the drawings) to a position centrally between the two retaining-heads upon the stand or support k' . For this purpose the retaining-heads are moved away from each other far enough to allow the barrel to roll between them onto the said supports k' . By a proper movement of the handle or lever k steam is admitted to the retaining-cylinder by opening the valve thereof by the mechanism connecting it to the said operating lever or handle above described. By the action of the retaining-cylinder the two retaining-heads are closed simultaneously upon the barrel, which is held centrally in the heads by the springs Q , surrounding each end of the barrel, so that the ends may abut against the plates P in the retaining-heads and be held rigidly but centrally between them with all the force of the retaining-cylinder until a reverse movement of the retaining-heads is required, which is effected by the retraction of the piston, which draws the heads away from each other and approaches them as may be needed in working the machine. The two heads for being connected to the retaining-cylinder, as above described, must move equally and at the same time. The barrel, when thus clamped in the two retaining-heads, is now in condition to have the hoops thereon driven up.

As above said, and shown in Fig. 3, the outer surface of the rings 1, 2, and 3 consists of a number of inclined planes, forming a kind of

cams, and having therein \square -shaped slots or openings, through which the shanks of the drivers M project. The collars on the projecting ends of the shanks are drawn hard down upon the face of the inclined planes or cams by the springs g , Fig. 6. It will be obvious that on turning the said rings in one direction the inclined planes of the said rings will draw upon the drivers by virtue of the collars f bearing thereon, thereby withdrawing the inner ends of the drivers back into the slides K , so that they will not project beyond the inner surface of the retaining-heads and be in the way while the heads are closing upon the barrel. This movement of the rings for that purpose is effected by the racks and segment-gears above described, which are operated for that purpose by the handle or lever Y' on the shaft f' , which by moving in the proper direction will open the valves of the cylinders a' , e' , and e' , which by their respective connections with the shafts of the several racks and segment-gears will turn the rings in the proper direction to cause the inclined planes to draw outward the drivers. A reverse action of the piston will by another movement of the lever Y' turn the several rings so that the collars or heads of the drivers will be at the foot of the inclined planes, which will allow the drivers to be drawn inward by the springs, so that the driving-joints thereof will impinge upon the barrel near the outer edges of the hoops, against which they are forced for driving them up. This action of the machine for driving the hoop up is accomplished by the slides K , carrying the hoop-drivers, which up to this time are in the position shown in Fig. 6, which, as will be seen in said figure, are not pushed forward toward the faces of the retaining-heads—that is to say, in direction of the arrows; nor are the drivers pushed in to engage the hoops for driving them up, excepting the chine-hoop drivers, which are always in at the time the barrel is being entered for being operated upon. Now, when the barrel is entered the chine-hoop drivers are to be withdrawn, which is done by pulling toward the operator the lever Y' . This movement of the lever admits at the same time the bilge-hoop drivers to be drawn inward to the barrel by the springs g in consequence of the peculiar shape and direction of the grooves in the heads of the arms R' S' T' , operating the valves of the steam-cylinders a' e' e' , connected thereto by the levers V' and pins, as above described, which in turn rotate the cam-rings for moving the drivers.

In detail the practical operation of the machine for driving up the hoops is as follows: Two hoops only are driven at one time; first, the two bilge-hoops. To this end the two cam-rings 3 3, respectively, of the retaining-heads are rotated, so as to allow the shanks of the bilge-hoop drivers to move (in the transverse slots of the openings in the cam-rings) down the inclined plane of the cams to the lower longitudinal slot, so that the spring g may

draw the said bilge-drivers radially inward to the barrel, that the points thereof may engage the hoops. This rotative movement of the two cam-rings above alluded to is effected by the steam-cylinder e' , operated for that purpose by the hand-lever Y' by drawing it toward the operator—that is, away from the machine. Said lever, being on the shaft Q' , will by its connection with the valve-rod of said cylinder e' , as above described, admit steam to one end of the piston thereof, causing it to operate the shaft J' in connection with the piston of the cylinder. This movement of the shaft J' operates the segments I' , which in turn rotate the cam-rings by their engagement with the racks of the rings. The drivers thus brought in position for driving the bilge-hoops, the driver-slides are now suddenly moved forward by the driving-cylinders operated for that purpose by the hand-lever t , connected to the valves of the cylinders by the interposed mechanism above described. As the slides move forward in the direction of the arrows the shanks of the bilge-drivers move along in the lower longitudinal slot of the openings in the cams, while the other drivers move along in the upper slots. When the two bilge-hoops have been driven up, another movement of the hand-lever t (now toward the machine) admits steam to the other end of the pistons of the driving-cylinders, causing a reverse movement of the driver-slides, which will bring the shanks of the drivers back to the transverse slot of the cam-openings for withdrawing the drivers from the barrel, which is done by reversing the rotative movements of the cam-rings 3 3, thereby causing the collars f of the drivers to move up the inclined planes of the rings. As aforesaid, the peculiar shape and direction of the grooves in the arms R' , S' , and T' , in which the pins j move for actuating the levers V' and valves of the cylinders to which they are respectively connected, are such that while the valve of the cylinder e' is being operated for rotating the cam-rings 3 3 in one direction the valve of the cylinder e' is operated, and by its connection with the cam-rings 2 2, as above set forth, and shown in the drawings, turns said cam-rings 2 2 in an opposite direction from the movement of the cam-rings 3 3. This movement of the rings 2 2 will bring the middle or quarter hoop-drivers of the slides to the barrel by the co-operation of the inclined planes (down which the shanks of the drivers move) and the reaction of the springs g , substantially in the same way as were the bilge-drivers and cam-rings actuated, as before described. At this moment the driving-cylinders are again operated by the hand-levers t , which force the slides forward in direction of the arrows, taking with them the drivers, the points of which drive the middle hoops, 2 2, farther on the barrel as the bilge-drivers did the bilge-hoops aforesaid. A still further forward movement of the lever Y' toward the machine, by virtue of the peculiar shape of the grooves in the arms R' , S' , and

T, changes the position of the valves of the cylinders a' c' , and they in turn by their respective connections with the cam-rings 1 1 and 2 2 of the retaining-heads, as above described, withdraw the drivers from the middle hoops, and at the same time let in the chine-hoop drivers which had been withdrawn, as aforesaid, at the time the bilge-hoop drivers were let in. Steam is now admitted to the driving-cylinders which had been previously drawn back, after driving on the middle hoops, by reversing the action of the hand-lever t , which again drives the driver-slides forward with a sudden blow of the drivers upon the chine-hoops, thereby setting them farther upon the barrel, substantially as were the middle hoops and bilge-hoops driven up for being tightened upon the barrel. The lever t is now drawn forward, thereby admitting steam to the other end of the pistons of the driving cylinders for moving back the driver-slides. At this time the lever k is drawn toward the operator for letting steam to the other end of the piston of the retaining-cylinder for moving the retaining-heads apart, so that the barrel may be removed from the retaining-heads by rolling it out of the opposite side from which it was entered to give place to another. The retaining-heads do not approach each other so as to touch. A space is therefore interposed between them for the accommodation of the supporting-stand k' and the movable sides n' , which as the heads come together are closed up against the supporting-stand k' . When the retaining-heads recede from each other the movable sides are drawn out by the chains V, connecting them respectively to the retaining-heads.

What I claim as my invention, and desire to secure by Letters Patent, is—

40 1. In machines for driving hoops on barrels, a pair of retaining-heads, E and F, arranged to co-operate relatively in respect to each other, as described, and consisting of a shell provided with a peripheral series of longitudinal moving slides or heads, having therein hoop-drivers adapted to move radially in relation to the axial line of the retaining-heads and at right angles to the movement of the said slides or heads, substantially as herein set forth.

50 2. In combination with the shell of the retaining-heads, slides and drivers arranged therein, the springs g and rotative rings the perimeters of which are a series of inclined planes, forming cams, in which are longitudinal slots, connected to each other by transverse slot adapted to receive and allow the shanks of the drivers to slide therein to permit the rings to rotate for actuating the drivers in a radial direction by the co-operation of the cams or inclined planes, springs, and collars f , substantially as and for the purpose set forth.

3. In a horizontal double-ended machine for driving hoops on barrels, the retaining-heads E F, connected to each other by rods X and B', pivoted arms y and A' and D' C', and links con-

necting said arms to the head V, in combination with the steam-retaining cylinder, whereby the retaining-heads are operated reciprocally and simultaneously in alignment one with the other for the purpose specified, and substantially as set forth.

4. In a machine for driving hoops on barrels, in combination with the cam-rings of the retaining-heads and racks respectively connected thereto, segment-gears arranged to engage the said racks for rotating the cam-rings, substantially as described, and for the purpose specified.

5. In combination with the shell of the retaining-heads and driver-slides, a jacket of rotative rings the perimeters of which are a series of inclined planes, forming cams, and having E-shaped openings therein for the admission of hoop-drivers, said drivers being actuated radially in the retaining-heads by the cam-rings, substantially as set forth, and for the purpose specified.

6. With the segment-gears feathered to their respective shafts, that they may slide thereon conjointly with the movements of the retaining-heads, the combination of the cylinders a' , c' , and e' , connected to the said shafts by piston-rods, and arms 3'', 4'', and 0'' for operating the same for the purpose specified, and substantially as described.

7. In a machine for hooping barrels, the steam-cylinders a' , c' , and e' , arms R' and T', having in the heads thereof a cam groove or slot reversely arranged in relation to each other, arms S', between the arms R' and T', and having in the head thereof a groove with a central depression, lever-arms V' and pins projecting therefrom respectively into the grooves of the arms R' S' T', and shafts J', 4', and 3', with their respective segments, in combination with the rings of the retaining-heads, substantially as described.

8. In combination with the retaining-cylinder R and retaining-heads of a hoop-driving machine and connecting mechanism, the lever k and shaft l , mounted on main frame, as shown, connected by suitable mechanism to the valve of said cylinder for actuating the same, for the purpose set forth.

9. In combination with the retaining-heads herein described, the self-adjusting abutment-plate and centering springs arranged within the cavity of the retaining-heads, substantially as described, and for the purpose specified.

10. In a machine for driving hoops on barrels, the retaining-heads, having thereon a series of rotative cam rings, and provided with an annular series of slides carrying the drivers K, in combination with the driving-cylinders F' and U, substantially as set forth.

11. In combination with the slides K, drivers, and cam-rings of the retaining-heads, the spring g and collars f , constructed and arranged to operate and co-operate substantially as set forth.

12. In a machine for driving hoops on barrels, in combination with the retaining-heads,

the frame or stand h' , supporting-plate, and supplementary movable frames m' and n' , connected respectively to the retaining-heads, substantially as and for the purpose set forth.

- 5 13. In a machine for driving hoops on barrels, the combination of the retaining-heads, provided with annular series of slides K , carrying the hoop-drivers M , rotative cam-rings, and spring g for operating the drivers radi-
to ally, driving-cylinders, and retaining-cylinder

R , arranged to operate and co-operate substantially in the manner as described, and for the purposes specified.

In testimony whereof I affix my signature in presence of two witnesses.

MARK L. DEERING.

Witnesses:

J. H. BURRIDGE,
W. H. BURRIDGE.