

(No Model.)

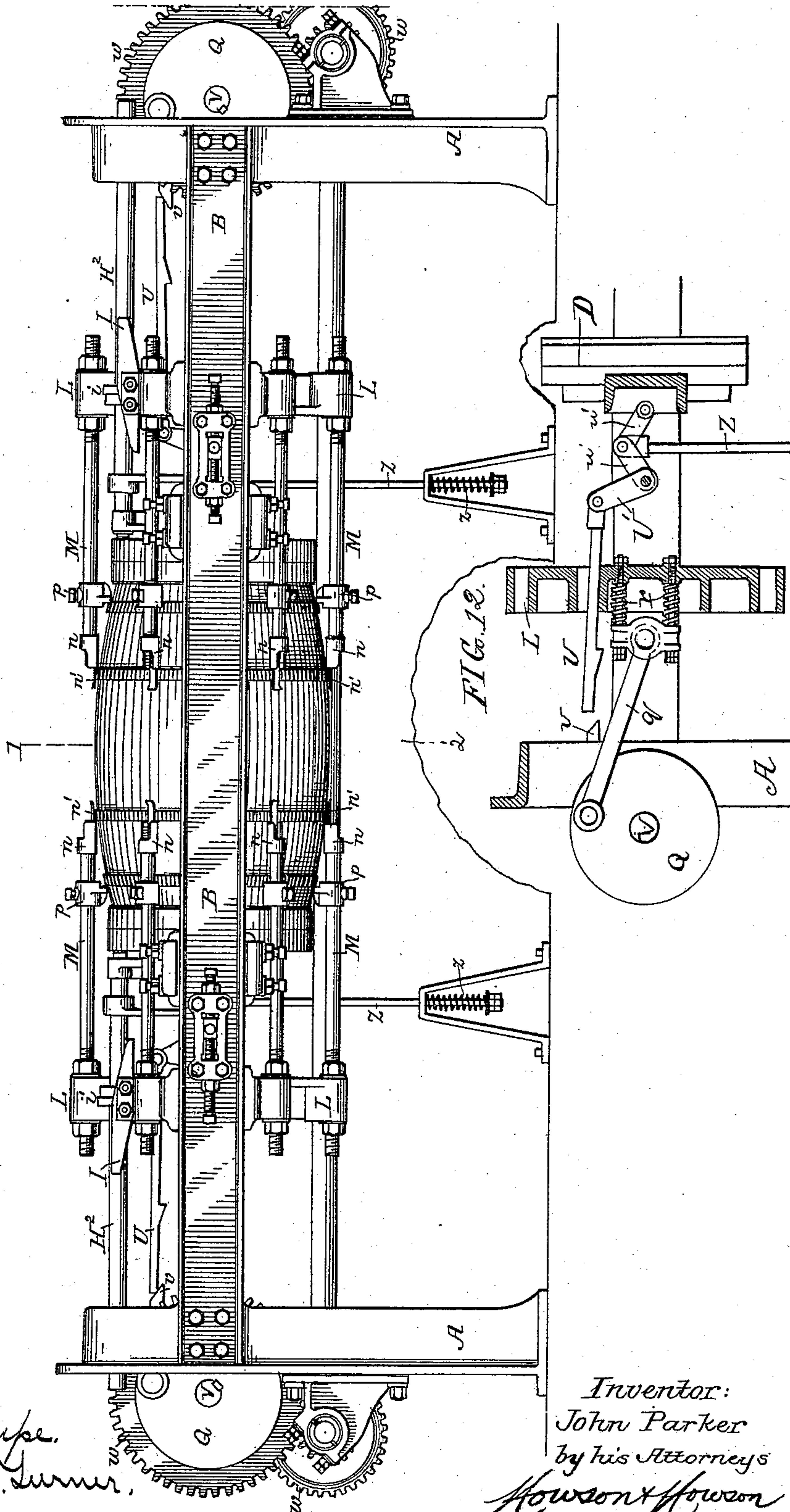
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J. PARKER.  
BARREL SETTING UP MACHINE.

No. 426,850.

Patented Apr. 29, 1890.

FIG. 1.



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O. V. Groupe.  
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Inventor:  
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by his Attorneys  
Howson & Howson

(No Model.)

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FIG. 2.

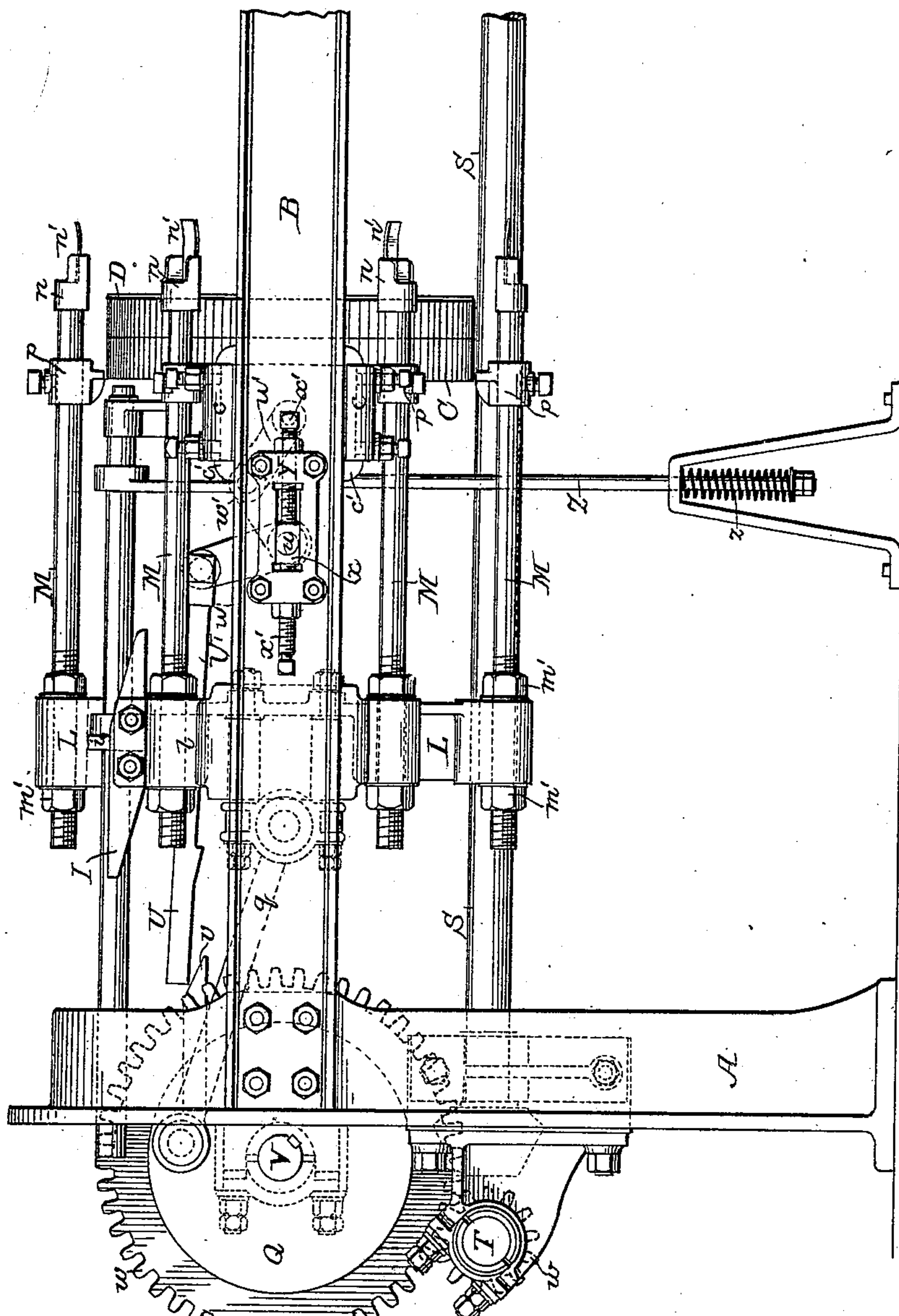
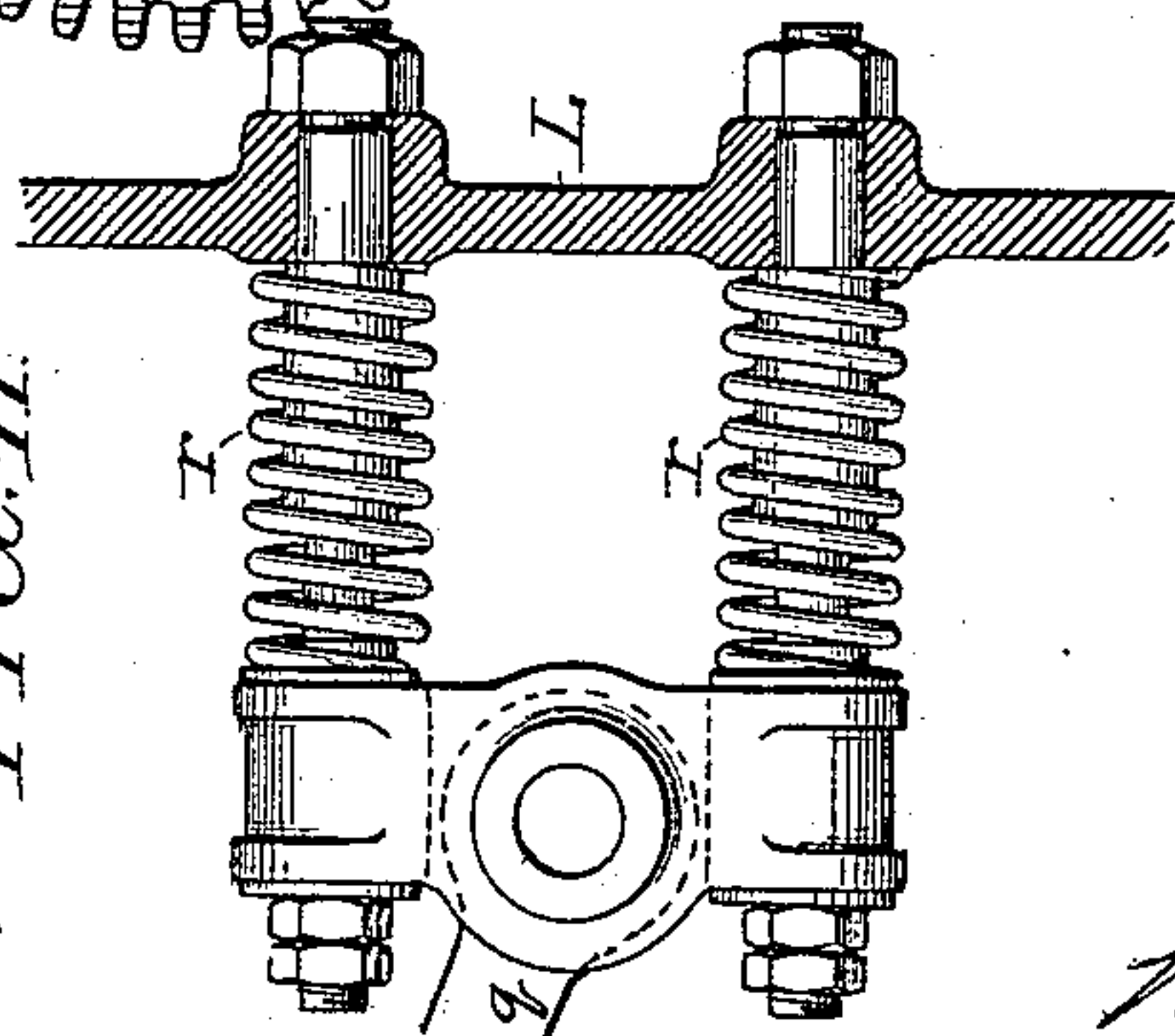


FIG. 11.



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(No Model.)

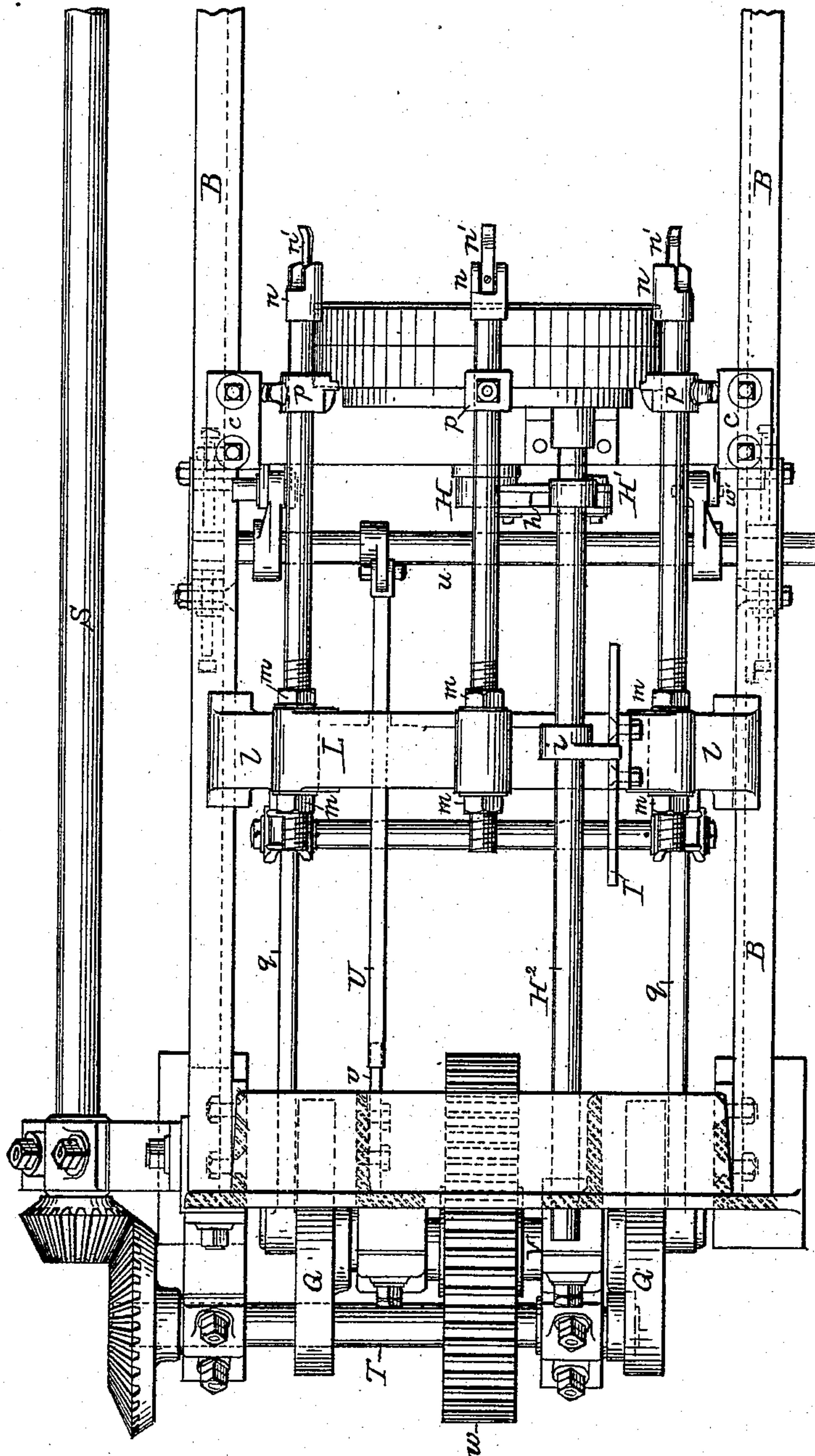
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FIG. 5.

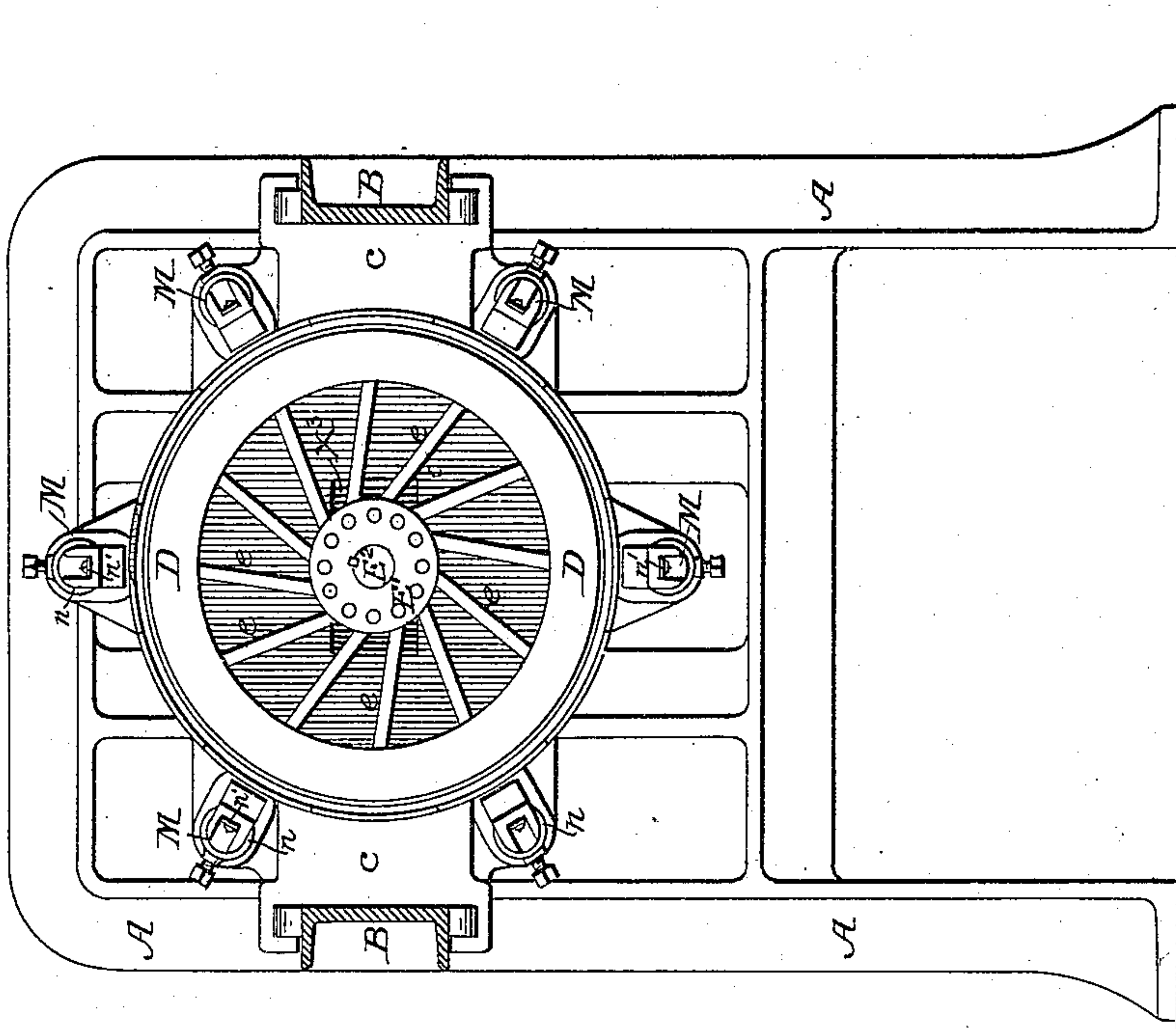
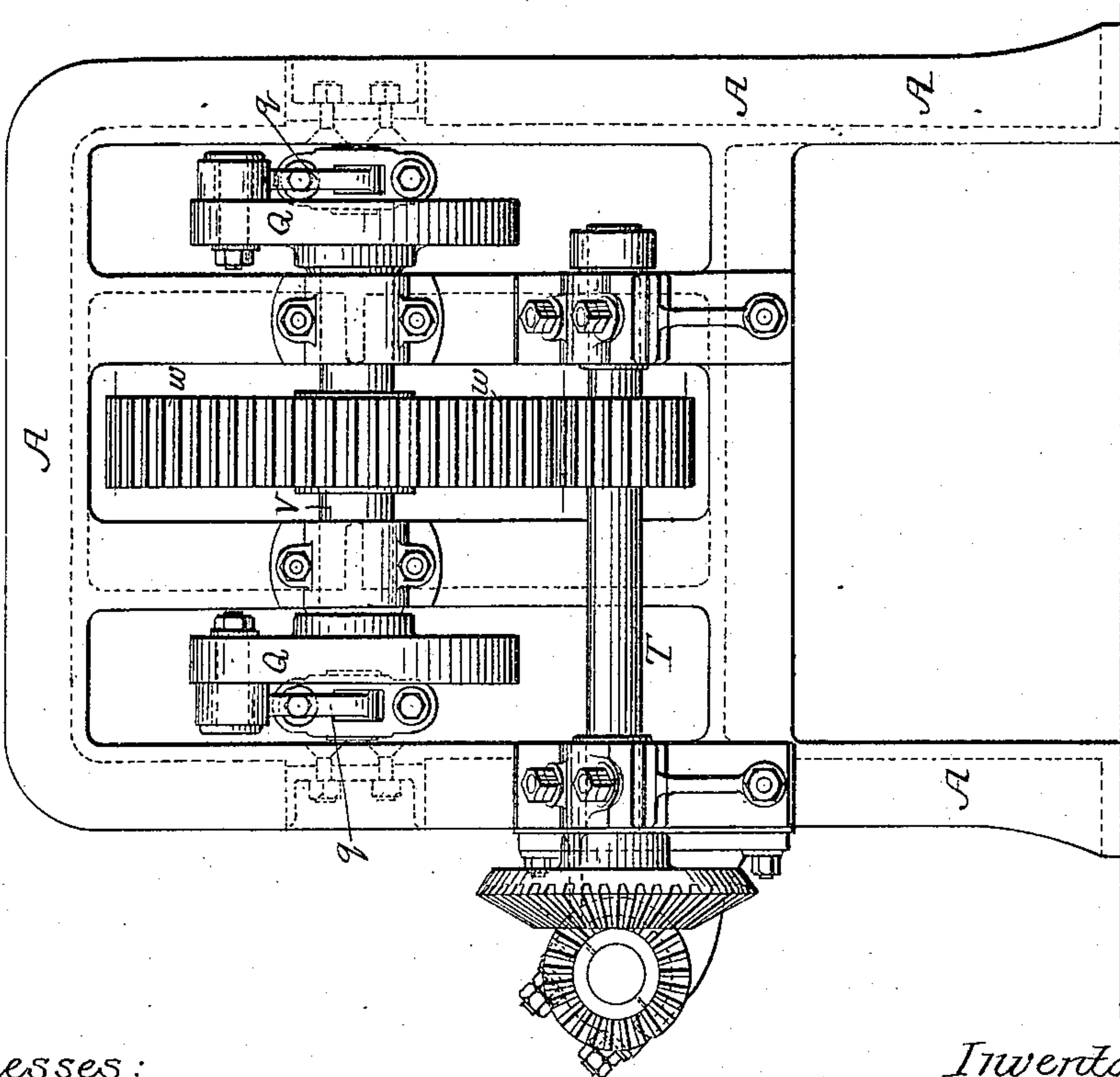


FIG. 4.



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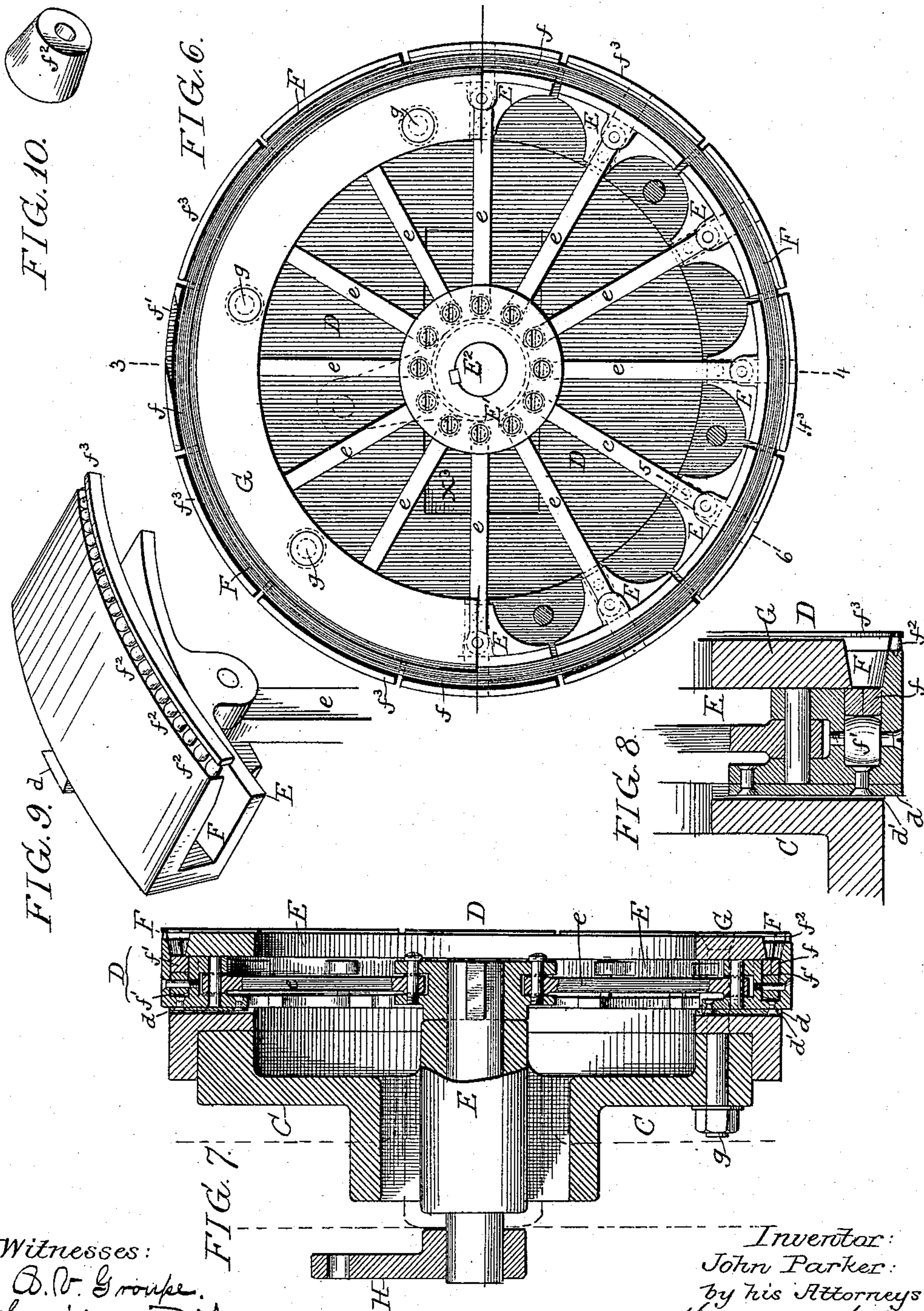
(No Model.)

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J. PARKER.  
BARREL SETTING UP MACHINE.

No. 426,850.

Patented Apr. 29, 1890.



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# UNITED STATES PATENT OFFICE.

JOHN PARKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO MARIA  
E. BEASLEY, OF SAME PLACE.

## BARREL-SETTING-UP MACHINE.

SPECIFICATION forming part of Letters Patent No. 426,850, dated April 29, 1890.

Application filed July 8, 1889. Serial No. 316,840. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN PARKER, a subject of the Queen of Great Britain and Ireland, residing in Philadelphia, Pennsylvania, have  
5 invented certain Improvements in Barrel-Setting-Up Machines, of which the following is a specification.

My invention relates to that class of barrel-setting-up machines in which the heads  
10 are held in position while the staves are fed around the head, assuming the form of a barrel; and it consists of certain improvements in the construction of such a machine, with  
15 a view to its simplicity of action and economical construction, as fully described hereinafter.

In the accompanying drawings, Figure 1 is a front elevation of my improved barrel-setting-up machine. Fig. 2 is an elevation of a  
20 portion of the machine on a larger scale. Fig. 3 is a plan of that portion of the machine shown in Fig. 2. Fig. 4 is an end elevation. Fig. 5 is a transverse sectional elevation on the line 1 2, Fig. 1. Fig. 6 is a face view,  
25 partly in section, of one of the stave-receiving heads drawn to a larger scale. Fig. 7 is a section of one of the stave-receiving heads on the line 3 4, Fig. 6. Fig. 8 is a section of a portion of the head on the line 5 6, Fig. 6,  
30 on a still larger scale; and Figs. 9, 10, 11, and 12 illustrate details of portions of the machine.

My invention relates mainly to the construction of the heads for receiving the ends  
35 of the staves, said heads being formed of a number of segments movable in a radial line, so that the diameter of the heads may be increased or diminished during the operation of the machine, the heads being opened to  
40 their greatest diameter while the staves are being fed thereto, and when the full number of staves necessary to make a barrel have been placed therein the segments are drawn closely together, and the heads thus collapsed  
45 draw the ends of the staves closely around the head of the barrel, which latter has previously been placed in position. The hoops may then be driven on by suitable pushing-arms of any desired construction.

50 My improvements further relate to mech-

anism for automatically collapsing and extending these segments; to adjusting devices by which the heads may be moved to a greater or less distance from each other for the purpose of forming barrels of different lengths; 55 to the construction of the head carrying the hoop-drivers, by which an excessive strain upon the hoop while being driven upon the barrel is avoided, and to the general construction of the machine as a whole, as fully 60 set forth hereinafter.

In machines of this class heretofore constructed it has been a common practice to drive a single "truss-hoop" upon each end of the barrel after the staves have been "set up" 65 in the machine; but this process is expensive, for the reason that coopers must be employed to remove these truss-hoops after the barrel comes from the machine and to place ordinary hoops upon the finished bar- 70 rel. To overcome this difficulty, I propose to drive upon the barrel while it is yet in the machine the finishing-hoops, and any number of such hoops may be placed upon each end of the barrel, according to the character 75 of the barrel to be made.

The machine shown in the accompanying drawings is especially designed for the manufacture of that class of barrels used for pack- 80 ing sugar, and known in the market as "slack" barrels. In a barrel of this character six hoops are used—three on each end of the barrel—and of this number I propose to drive upon the barrel before it leaves the machine the four inner hoops, leaving the 85 end hoops, which serve to hold the head of the barrel in place, to be fixed in position after the barrel has been packed.

The fixed frame of the machine consists of end standards A, connected together by lon- 90 gitudinal side beams B, the end frames serving to support the driving-shafts and mechanism, while the connecting-beams guide and support the stave-receiving and the hoop-driving heads. Each stave-receiving head, 95 as will be seen more clearly on reference to Figs. 5, 6, and 7, consists of two main portions C and D, the portion C being solid and provided with guiding-extensions *c* at each side, the extensions being grooved and pro- 100



vided with suitable anti-friction bearing-blocks  $c'$ , resting upon the beams B, so that said head may be freely moved from and toward its fellow. The portion D is formed of  
 5 any suitable number of segments—twelve in the present instance—which are provided with dovetailed slides  $d$ , Fig. 9, working in suitable radial slideways  $d'$  in the portion C. Each of the segments E is connected by  
 10 a radial arm  $e$  to a central hub  $E^2$ , mounted upon a shaft  $E^2$ , and to which said hub is keyed or otherwise secured, and each segment E is provided with a curved groove F, of the character more clearly shown in Figs.  
 15 6 and 7, so arranged with reference to the grooves of the other segments that when all the parts are assembled to form a complete head these grooved portions will form a complete annular stave-receiving groove.  
 20 In this annular groove is placed a ring  $f$ , upon which the ends of the staves are adapted to bear, the ring being formed with an overlapping joint to permit the head to expand or contract, the ring being backed upon a number of anti-friction rollers  $f'$ , carried by the  
 25 various segments E, and being held to its proper position in the groove by an outer ring G, suitably secured to the portion C of the head by a number of bolts  $g$ . Each segment  
 30 also carries upon the outer flange, which surrounds the groove F, a number of conical rollers  $f^2$ , mounted upon studs projecting from the flange, or, as in the present instance, upon pins extending from the flange to an outer  
 35 segment  $f^3$ , as shown more clearly in Figs. 8 and 9. These rollers  $f^2$  are made in the form of cones which taper from the apex to the base in a degree corresponding with the bend of the barrel-staves, and serve to prevent excessive friction between the staves and the  
 40 outer flange. At  $F'$  a portion of the outer flange of one of the segments is removed to permit the entrance of the staves to the groove F from any suitable feeding device—  
 45 such, for instance, as that shown in my application filed July 12, 1889, Serial No. 317,306.

The shaft  $E^2$  is mounted centrally in the fixed portion C of the head and extends for a short distance beyond the same, and at the  
 50 rear end is provided with a crank H, the outer end of which is connected by a link  $h$  to an operating-arm  $H'$ , fulcrumed upon a rock-shaft  $H^2$ , suitably mounted in bearings on the machine. Upon this shaft  $H^2$ , at some distance  
 55 from the operating-lever  $H'$ , is secured a toe  $i$ , adapted to be acted upon by a tapering block I, carried by the head L, to which the hoop-driving arms are affixed, and as this head is moved to and fro during the operation of the  
 60 machine the tapered block I, carried thereon, will act upon the toe  $i$  of the shaft  $H^2$ , giving said shaft a partial rotation, which movement, acting through the operating-lever  $H'$  and the crank H, serves to collapse or to expand the  
 65 the head, according to the direction in which the hoop-driving head is moved.

The hoop-driving head is of any desired

shape, and is provided with guiding-extensions  $l$ , of a character similar to those upon the portion C of the stave-receiving head, extending transversely to the beams B, upon which they are supported and guided. In this head L are formed a number of radial slots  
 75  $m$ , through which pass the hoop-driving arms M, said arms being secured to the head L by nuts  $m'$  upon their threaded ends, the radial slots permitting the adjustment of the arms to suit barrels of different diameters, as shown by dotted lines in Fig. 3. The inner ends of the arms M are provided with blocks  $n$ , from  
 80 which project springs  $n'$ , serving to hold the hoops in position before they are driven upon the barrels. At a short distance from the rear of these blocks the arms M are provided with adjustable pushing-blocks  $p$ , which carry  
 85 another hoop, these blocks being adjustable to suit different lengths and diameters of barrels.

On reference to Fig. 11 it will be seen that the connecting-rod  $q$ , which extends from the  
 90 driving-crank Q to the hoop-driving head, is not directly connected to the latter, but that the driving-pressure is first exerted upon a number of springs  $r$ , and through them transmitted to the head, as shown in Fig. 12. Such  
 95 a construction, while not absolutely necessary to the proper working of the machine, adds greatly to its effectiveness, inasmuch as the wooden hoops which are driven upon the barrels are of such a slight character that any excessive pressure due to the varying diameters of the hoops or to the slight variation in the diameter of the barrel would break the  
 100 hoop, and thus add to the cost of manufacture. By the aid of this spring-cushion, however, the amount of pressure brought upon each hoop can be adjusted, and if the breaking strain of the hoop be first ascertained the pressure in driving need never exceed that  
 105 limit.

The driving mechanism of the machine is of very simple character, consisting of a longitudinal shaft S, to which the driving-power is applied, this shaft being connected at each  
 110 of its ends to transverse shafts T, carried in suitable bearings upon the end frame by bevel-gearing, and these shafts T communicating with the crank-shaft V by spur-gearing  $w w$ , so that the movement of the heads toward each other is simultaneous. The reciprocal  
 115 movement is imparted directly to the hoop-driving head, the little reciprocating movement which it is necessary to give the stave-receiving heads to release the finished barrel being transmitted to said head  
 120 by a pawl-bar U, passing through the hoop-driving head and having one of its ends connected to a crank U' upon a rock-shaft  $u$ , said shaft communicating with the stave-receiving head through the toggle-levers  $u'$ .  
 125 The head L engages with the pawl-bar U each time said head is reciprocated, and through this bar transmits a similar reciprocating movement to the stave-receiving head, any  
 130



excessive backward movement of the stave-receiving head being prevented by a tapering block *v*, extending from the frame-work of the machine and adapted to engage with the end of the pawl-bar *U* and lift said bar out of engagement with the head *L*, thus preventing any further rearward movement of the stave-receiving head.

The shaft *u* is held in bearing-block *x* in a guideway *Y* upon the beams *B*, and this block is adjustable by means of set-screws *x'*, in order that the stave-receiving heads may be moved from or toward each other for the manufacture of barrels of different lengths. After the stave-receiving heads have been drawn back to allow the finished barrel to be removed they are again forced to the working position by means of springs *z*, operating from a rod *Z*, the upper end of which is secured to the toggle-levers *u'*, as shown in Fig. 12.

The operation of the machine is as follows: Considering the stave-receiving heads to be in working position with the segments open to their fullest extent, the hoop-driving head being drawn to the limit of its rearward movement, the staves are fed one by one through the opening in the outer flange of the head *D*. Then, when the full number of staves necessary to make a barrel have been fed to the head, the operator, after stopping the feed and lifting from the path of the hoop-driving arms the apron which usually forms a part of such feeding devices, starts the machine, and the hoop-driving arms are moved toward each other. The block *I* will first act upon the toe *i*, and through the medium of the operating-lever *H'* and the crank *H* will draw the segments composing the head toward the center and force the staves upon the barrel-head, which has previously been placed in position. Then the hoop-driving arms, continuing their forward movement, force the hoops upon the barrel, and when the hoops are in place the drivers are reversed and return to their first position. The toe *i* is released from the control of the block *I* and the head permitted to expand. Then the pawl-bar *U* is caught by the hoop-driving head and the stave-receiving heads are drawn back, permitting the finished barrel to fall from the machine. Upon continuing this rearward movement the pawl-bar *U* engages with the tapering block *v*, the pawl-bar is released, and the spring *z* is permitted to act upon the stave-receiving head and force it to the first position.

Each of the stave-receiving heads is preferably provided with an air-passage *x<sup>3</sup>*, which is adapted to an exhaust-pipe, as shown by dotted lines in Fig. 7, communicating with an exhaust-fan, so that the air in the portion *D* may be removed therefrom, and the heads

of the barrel, when once placed in position against the stave-receiving heads, will be held closely thereto by atmospheric pressure, as clearly shown and described in the United States Patent to George M. Newhall, No. 393,571, dated November 27, 1888.

I claim as my invention—

1. The combination, in a barrel-setting-up machine, of the stave-receiving heads, grooved segments thereon adapted to receive the staves as they are fed into the machine, radial guides for said segments, and mechanism for simultaneously moving said segments toward and from the center of the heads, substantially as and for the purpose specified.

2. The combination, in a barrel-setting-up machine, of the hoop-driving arms, with a stave-receiving head composed of a number of radially-movable segments grooved for the reception of the ends of the barrel-staves, and a split ring adapted to said grooves and by which the end-thrust of the staves is taken, substantially as specified.

3. The combination of the stave-receiving heads and hoop-driving-mechanism, with a transverse shaft, toggle-levers connecting the shaft with the stave-receiving head, and a pawl-bar connected to said shaft and adapted to be acted upon by the hoop-driving head on its rearward movement, substantially as specified.

4. The combination of the stave-receiving head and hoop-driving-head, the transverse shaft in the rear of said stave-receiving head and connected thereto and to the hoop-driving head, bearing-blocks for said shaft, longitudinally movable on the frame of the machine, and devices for adjusting said bearing-blocks, substantially as specified.

5. The combination of the stave-receiving head, with a hoop-driving head carrying a number of rigid arms, each of said arms terminating in a driving-block, and springs carried thereby for holding the hoop in position against said block, substantially as specified.

6. The combination, in a barrel-setting-up machine, of the hoop-driving head, with a stave-receiving head composed of a number of radially-movable segments, the central hub and its shaft, radial bars extending from said hub to the said segments, a rock-shaft mounted on the frame and connected to the central hub and carrying a toe, and a tapered block on the hoop-driving head adapted to act upon said toe, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN PARKER.

Witnesses:

JNO. E. PARKER,

WILLIAM D. CONNER.