

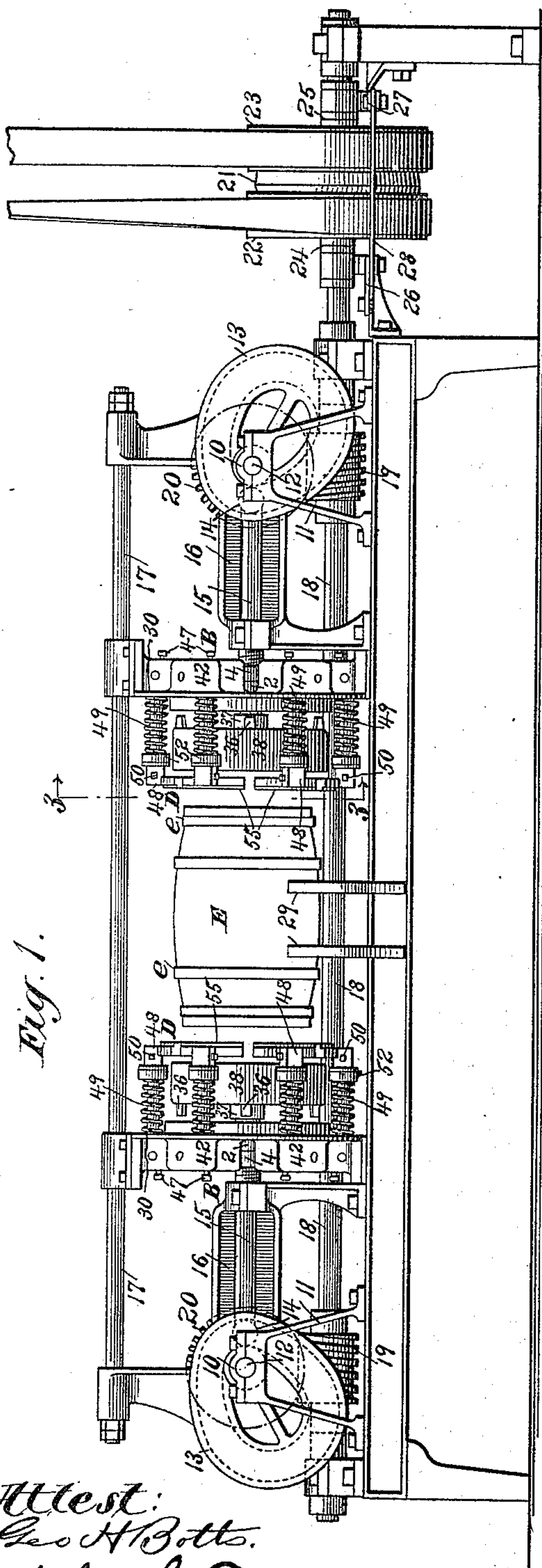
(No Model.)

2 Sheets—Sheet 1.

H. U. PALMER.  
BARREL HOOPING MACHINE.

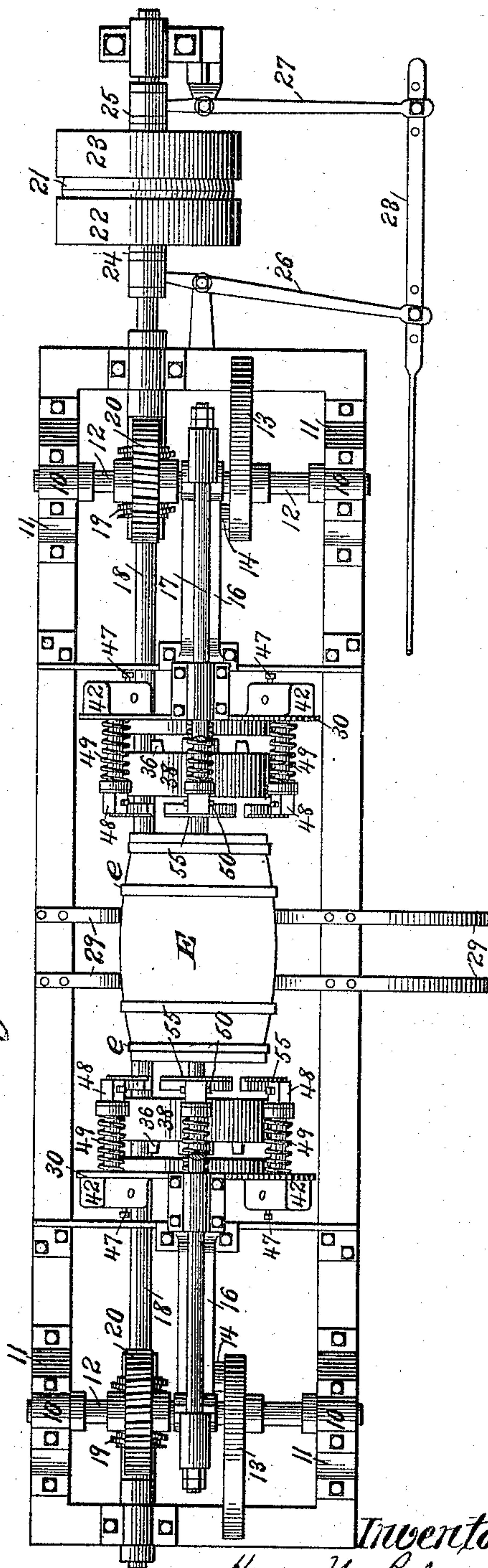
No. 573,159.

Patented Dec. 15, 1896.



Attest:  
Geo H. Botts.  
Arthur L. Hunt

*Fig. 2.*



Inventor  
Henry U. Palmer  
By Philip H. H. Phelps  
Atty.



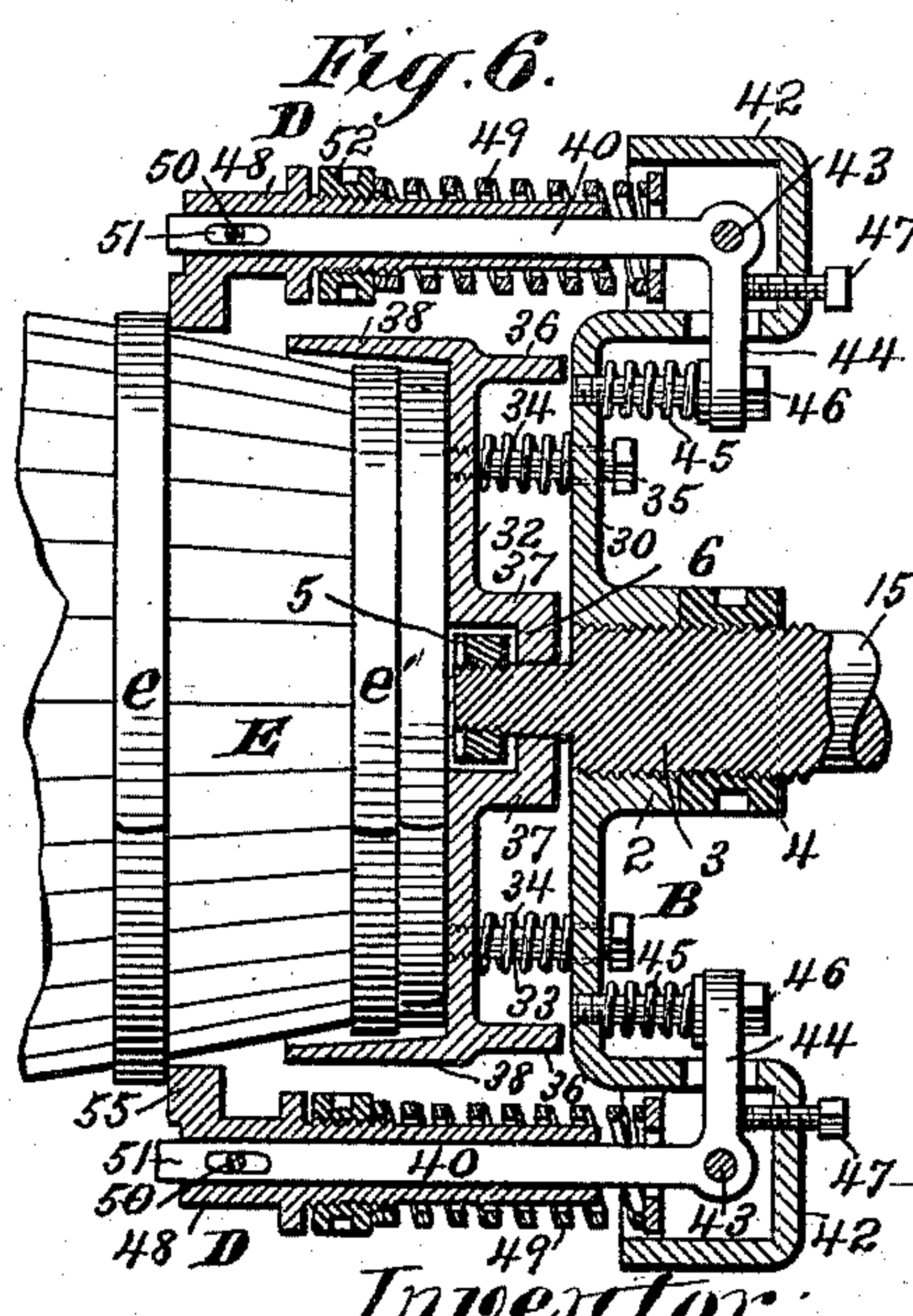
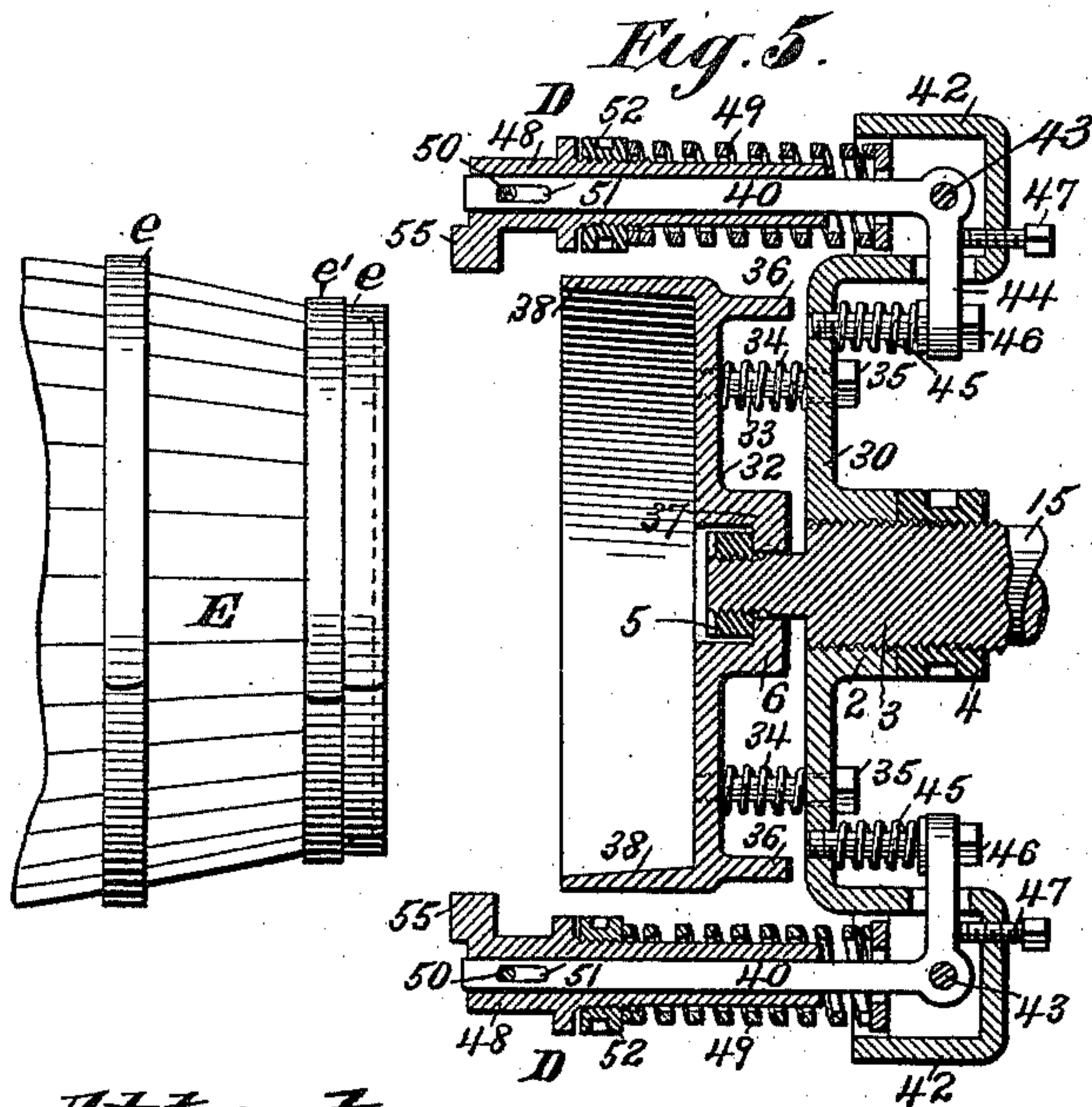
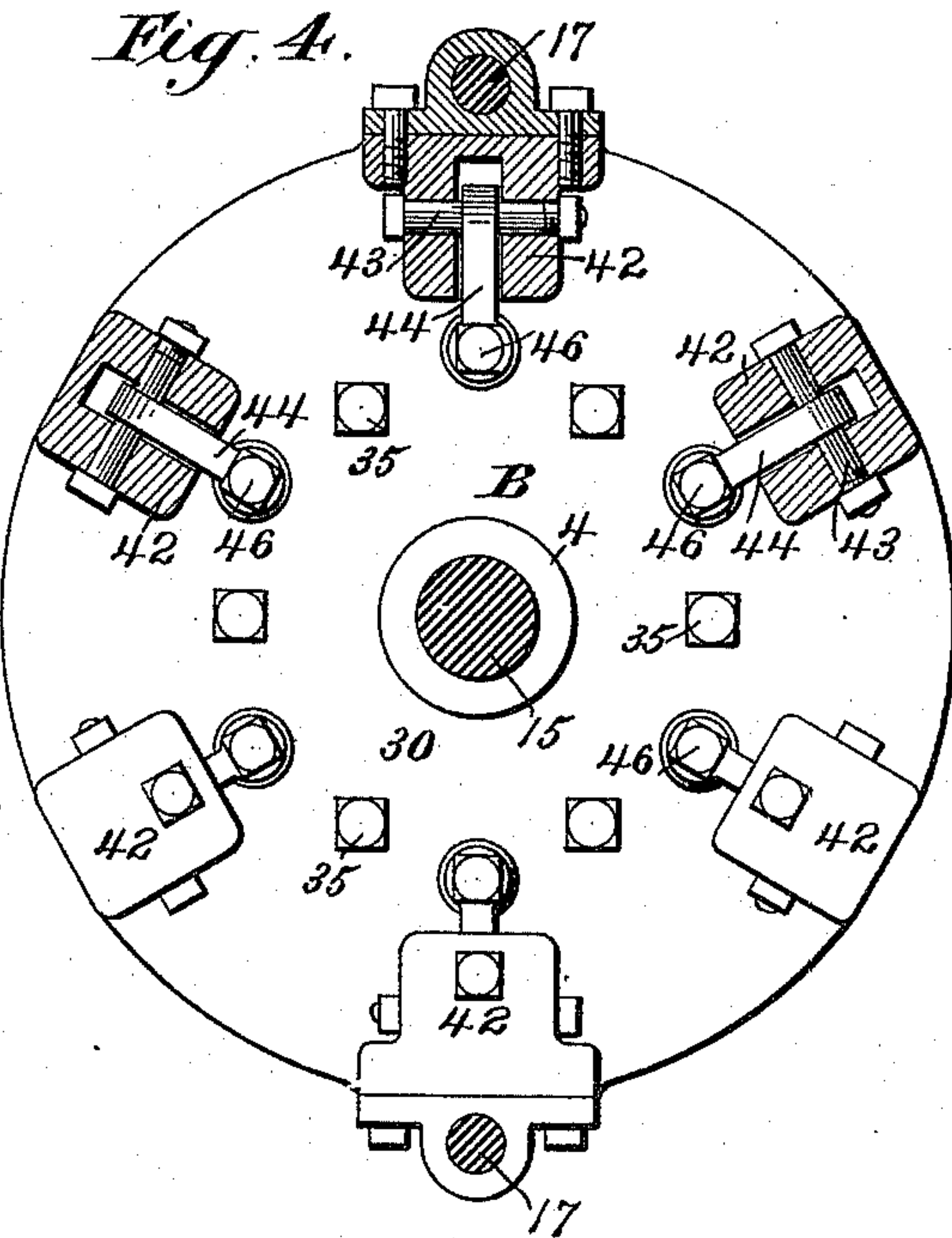
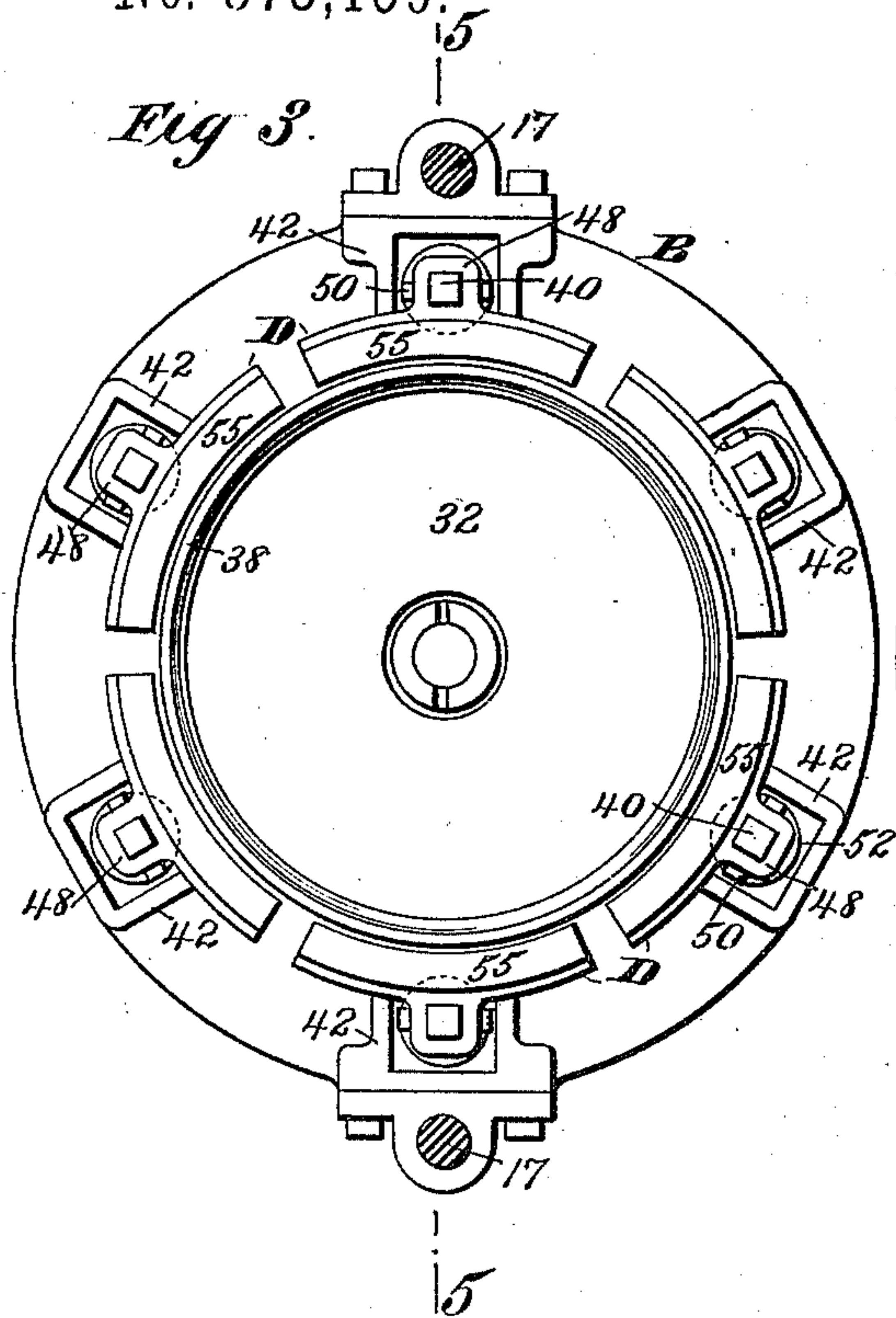
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by Philip Munson Phelps  
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# UNITED STATES PATENT OFFICE.

HENRY U. PALMER, OF BROOKLYN, NEW YORK.

## BARREL-HOOPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 573,159, dated December 15, 1896.

Application filed June 29, 1894. Serial No. 516,058. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY U. PALMER, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Barrel-Hooping Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to barrel-hooping machines.

The object of the invention is to provide an improved machine for driving or forcing hoops onto barrels or similar vessels, which shall be especially adapted for driving that kind of wooden hoops known as "patent" hoops, that is, hoops which are thicker in cross-section at one edge than at the other, having a beveled inner face to conform to the inclined surface of the barrel. I have aimed especially to produce a machine by which such hoops may be driven without breaking; but although the invention is especially intended for use in machines for driving patent hoops, yet it will be understood that machines embodying the invention may also be used for driving other hoops.

The invention consists in various constructions, arrangements, and combinations of parts, hereinafter fully described, and specifically pointed out in the claims.

As a full understanding of the invention can best be given by a detailed description of a machine embodying the invention in a preferred form, all preliminary description will be omitted, and such a full description will now be given in connection with the accompanying drawings, forming part of the specification, in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a plan view. Fig. 3 is a front elevation of one of the driving-heads. Fig. 4 is a rear elevation of one of the driving-heads, parts being shown in section. Fig. 5 is a section on line 5 of Fig. 3, also showing one end of the barrel with the hoops in place ready to be driven to position, the parts of the head being shown in their normal position; and Fig. 6 is a view similar to Fig. 5, showing the position of the parts at the end of the driving movement of the head.

The present invention relates particularly

to the construction of the driving-heads of the machine, and as the mechanism employed for operating the driving-heads in the machine shown is substantially the same as that described and claimed in Patent No. 195,041, granted to me September 11, 1877, I will first describe briefly the machine generally, including said driving mechanism, and afterward particularly describe the driving-heads.

The various parts of the machine are supported by a rectangular base-frame A. At each end of said base-frame are mounted mechanisms having the same construction and mode of operation and which reciprocate driving-heads B, hereinafter described. Each of said mechanisms is constructed as follows:

Mounted in bearings 10, carried by brackets 11 on each side of the frame, is a shaft 12, which carries a cam 13. In the groove of said cam 13 rides a friction roll or stud 14 on one end of the piston-rod 15, which rod is free to reciprocate in a suitable bearing, as 16, suitably supported on the main frame A. The piston-rod or plunger 15 has secured to its other end one of the driving-heads B, which heads slide on guide-rods 17.

Running longitudinally of the machine and mounted in suitable bearings on the frame A below the shafts 12 and the driving-heads B is a worm-shaft 18, having worms 19, one at each end, to engage with worm-wheels 20, carried by the shafts 12. For the purpose of driving said worm-shaft it is preferably provided with a friction-clutch composed of a bevel-faced friction-disk 21, fast on the shaft, and two pulleys 22 and 23, carried by sleeves 24 and 25, loosely mounted on said shaft. Said pulleys may be belted to rotate in opposite directions and are operated by levers 26 and 27, which engage the sleeves 24 and 25 and are thrown by means of a sliding rod 28, so that either of said pulleys may be thrown into engagement with the friction-disk 21. The worm-shaft 18 and the shafts 12, which are driven thereby, may thus be caused to rotate in either direction at will. The worms 19 and worm-wheels 20 at the respective ends of the machine are so arranged that the shafts 12 rotate in opposite directions. The cams 13 are preferably formed, as shown, so that the first part of the forward movement of the driving-head and the last part of the return



movement thereof shall be comparatively quick and the last part of the driving movement and the first part of the return movement of said driving-heads shall be comparatively slow, thus providing for a slower and more powerful movement of said heads when the greatest resistance in driving the hoops is encountered. Ways or supports 29 are provided to hold the barrel in position between the driving-heads. By this construction, when the worm-shaft 18 is rotated, the shafts 12 at either end of the machine will thereby be caused to rotate in opposite directions, and the cams 13, carried by said shafts 12, will cause the piston-rods 15 to reciprocate, thereby moving the driving-heads B toward and from each other.

The driving-heads B, carried by the piston-rods 15, are duplicates of each other, and each is constructed as follows: The body portion 30 of each of said heads consists preferably of a disk, as shown, and said body portion or disk is adapted to be secured to the end of one of the piston-rods 15, preferably by having a central screw-socket 2 to receive the threaded end 3 of the said piston-rod, thereby providing for adjustment of said head longitudinally of the machine, a nut 4 being preferably used to lock said disk in place. In front of and carried by the body portion or disk 30 is a driving-disk 32, which disk 32 is preferably supported, as shown, by being provided with a sleeve 37, into which projects the end of the rod 15. Cushion-springs 34 are preferably interposed between the said disks, and they are preferably spiral springs coiled about studs 33, which pass loosely through openings in the disk 30, and which studs also aid in supporting the disk 32. To limit the movement of the disk 32 toward the disk 30, the disk 32 is provided with feet or lugs 36 of suitable length, and its movement away from the disk 30 is limited by a nut 5 on the end of the rod 15 engaging a shoulder 6 in the sleeve 37. The disk 32 is provided around its periphery with an annular and preferably outwardly-flaring flange 38, which serves as a guide for the head of the barrel.

A series of driving-arms D for driving the bilge-hoops is carried by the body portion or disk 30 of the driving-heads B, said arms being arranged radially about said body portion. The driving-arms D comprise arms 40, which are pivoted to the disk 30, said disk being provided with lugs 42 to receive the pivots 43 and to guide the arms 40 and prevent lateral movement thereof. Each of the arms 40 has an inwardly-extending arm 44, against which bears a spring 45, which tends to throw the arm 40 inward. The spring 45 is preferably a spiral spring coiled about a screw-nut 46, which passes loosely through the arm 44 and is screwed into the disk 30. Set-screws 47 are preferably provided to limit the inward movement of the arm 40. The arms 40 carry sleeves 48, which are free to

slide on the arms 40 and are pressed outward by cushion-springs 49, the movement of said springs being limited, as by studs 50 passing through slots 51 in the arms 40. To provide for adjusting the tension of the cushion-springs 49, the sleeves 48 are screw-threaded for a portion of their length to receive adjusting-nuts 52, against which the springs 49 bear. The sleeves 48 have driving ends 55, curved to conform to the circumference of the barrel and laterally extended so as to form an almost continuous driving-ring. By thus extending the ends of the driving-arms the danger of breaking the hoops in driving them into position is greatly lessened, as the arms form in effect a continuous ring which bears evenly all around on the hoop.

The operation is as follows: The barrel E having been placed in position on the supports 29 and having the bilge and end hoops placed ready to be driven into position, the machine is started by throwing one of the revolving pulleys 22 23 into engagement with the disk 21, whereupon the heads B are started on their driving movement, as before explained. As each head advances, the ends 55 of the driving-arms D will first come into contact with the staves of the barrel before reaching the bilge-hoops *e*, and, as the head advances, will be held by the springs 46 in yielding contact with the surface of the barrel, while at the same time automatically adjusting themselves to the increasing diameter of the barrel, and will be brought squarely into engagement with the hoop *e*, thus being prevented from riding over said hoops; and the driving ends 55 extending laterally, as before described, an extended surface contact is provided between the hoop *e* and the ends 55 of said driving-arms, thereby evenly distributing the pressure on the hoops and greatly lessening the danger of splitting or otherwise injuring the hoops as they are being driven into position. The bilge-hoops will be forced onto the barrel by the driving-arms D until their resistance becomes greater than the power of the springs 49, when, the springs yielding, all undue pressure on the hoops by which they might be injured will be prevented. The power of the springs 49 may be regulated by adjusting the nuts 52. During the movement of the heads the end hoops *e'* will also be engaged and driven to position by the disk 32. By the further movement of the machine the driving-heads B will be carried away from each other to allow the barrel to be removed and a new one to be placed in position.

If desired, the cushion-springs 34 between the disk 32 and the disk 30 may be omitted, and the disk 32 will then be rigidly attached to the disk 30 or may be dispensed with, the end hoops being driven directly by the disk 30; but the springs are preferably used to compensate for small inaccuracies in the adjustment of the driving-heads or for small variations in the length of the barrels, preventing excessive pressure being exerted on



the barrel and making a smoother-running machine.

When two end hoops are provided on each end of the barrel, according to the usual practice, as shown, the inner end hoops are driven on by the outer end hoops.

It will be understood that my improved driving-head may be driven by other suitable driving mechanism than that shown, and a single head may be embodied in a machine for driving hoops on tubs and similar vessels on which the hoops are all driven from one end. It will also be understood that when quarter-hoops are also to be driven the driving-heads may be provided with two series of driving-arms, the arms of one series being shorter than those of the other series.

Various changes in the construction here shown and described will suggest themselves to those skilled in the art, and such modifications are within the invention.

What is claimed is—

1. A driving-head having a series of automatically and independently radially adjustable cushioned hoop-driving arms, substantially as described.

2. The combination of a series of automatically and independently radially adjustable cushioned hoop-driving arms, and an end hoop-driving disk having a guiding-flange, substantially as described.

3. The combination of a series of automatically and independently radially adjustable hoop-driving arms, and a cushioned end hoop-driving disk having a guiding-flange, substantially as described.

4. The combination with a disk 30, of a series of independently spring-pressed arms pivotally mounted on said disks, sleeves having a limited sliding movement on the arms 40, cushioned springs 49 for the sleeves 48, and means for adjusting the tension of the springs 49, substantially as described.

5. The combination with a disk 30 carried by a reciprocating rod 15, of an end hoop-driving disk 32 having a limited movement toward and away from the disk 30 and hav-

ing a sleeve adapted to slide on the end of the reciprocating rod 15, cushion-springs between said disks, and a series of automatically and independently radially adjustable cushioned driving-arms D carried by the disk 30, substantially as described.

6. The combination of a disk 30, a series of automatically and independently radially adjustable cushioned driving-arms D carried by the disk 30, and a cushioned end hoop-driving disk 32 carried by the disk 30, substantially as described.

7. The combination of two hoop-driving heads, each comprising a series of automatically and independently radially adjustable cushioned driving-arms and a cushioned end hoop-driving disk; guide-rods for said driving-heads; and means for oppositely reciprocating said driving-heads, substantially as described.

8. The combination of two hoop-driving heads, each comprising a series of automatically and independently radially adjustable cushioned hoop-driving arms and an end hoop-driving disk; and means for oppositely reciprocating said driving-heads, substantially as described.

9. The combination of two hoop-driving heads, each comprising a series of automatically and independently radially adjustable cushioned hoop-driving arms and an end hoop-driving disk having a guiding-flange; and means for oppositely reciprocating said driving-heads, substantially as described.

10. The combination of two hoop-driving heads, each having a series of automatically and independently radially adjustable cushioned hoop-driving arms; and means for oppositely reciprocating said driving-heads, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY U. PALMER.

Witnesses:

T. F. KEHOE,

ARTHUR L. KENT.