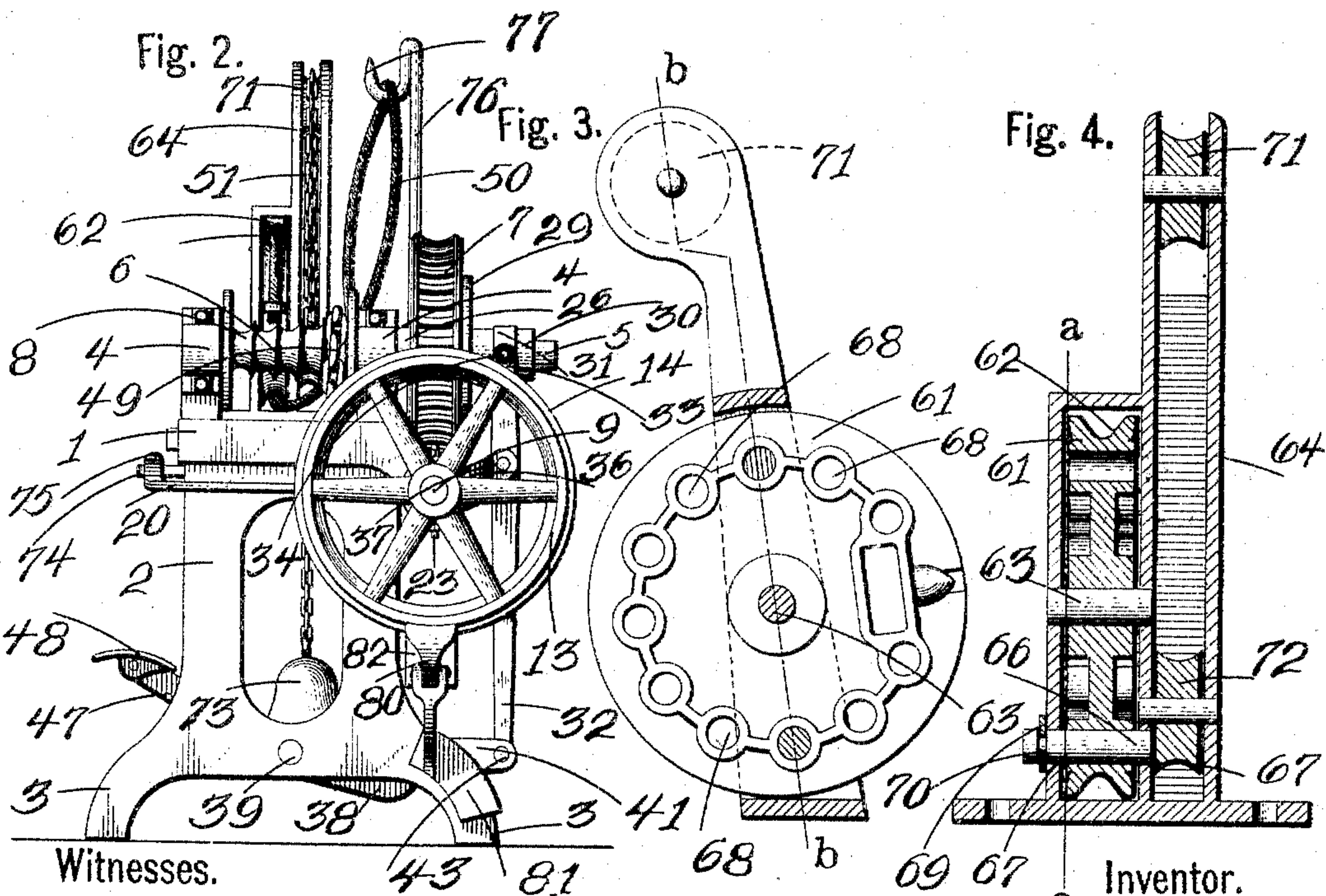
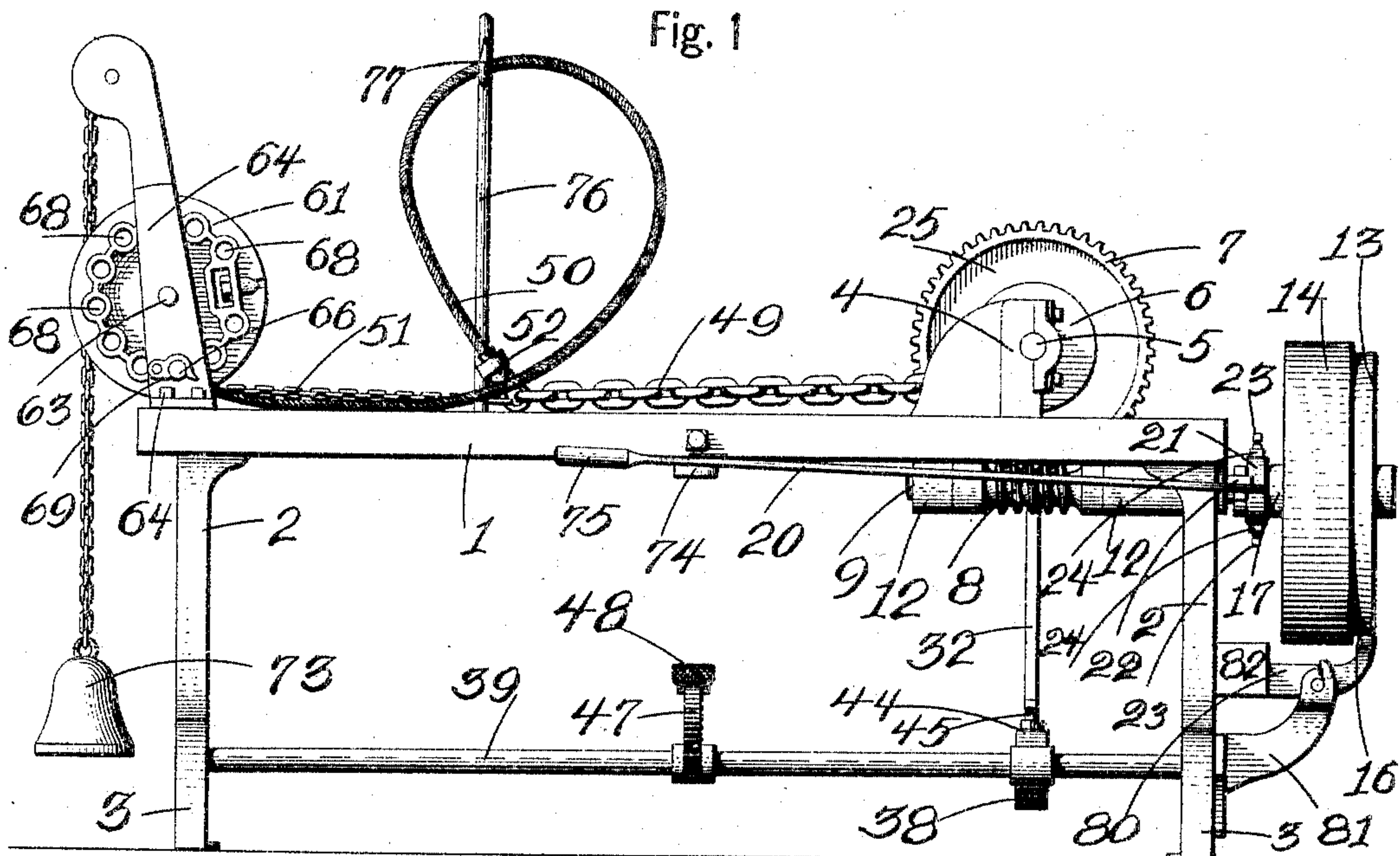


B. HOLMES.
BARREL STAVE COMPRESSING MACHINE.

APPLICATION FILED APR. 10, 1903.

2 SHEETS—SHEET 1.



L. M. Sangster.
Geo. A. Neubauer.

By

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No. 780,037.

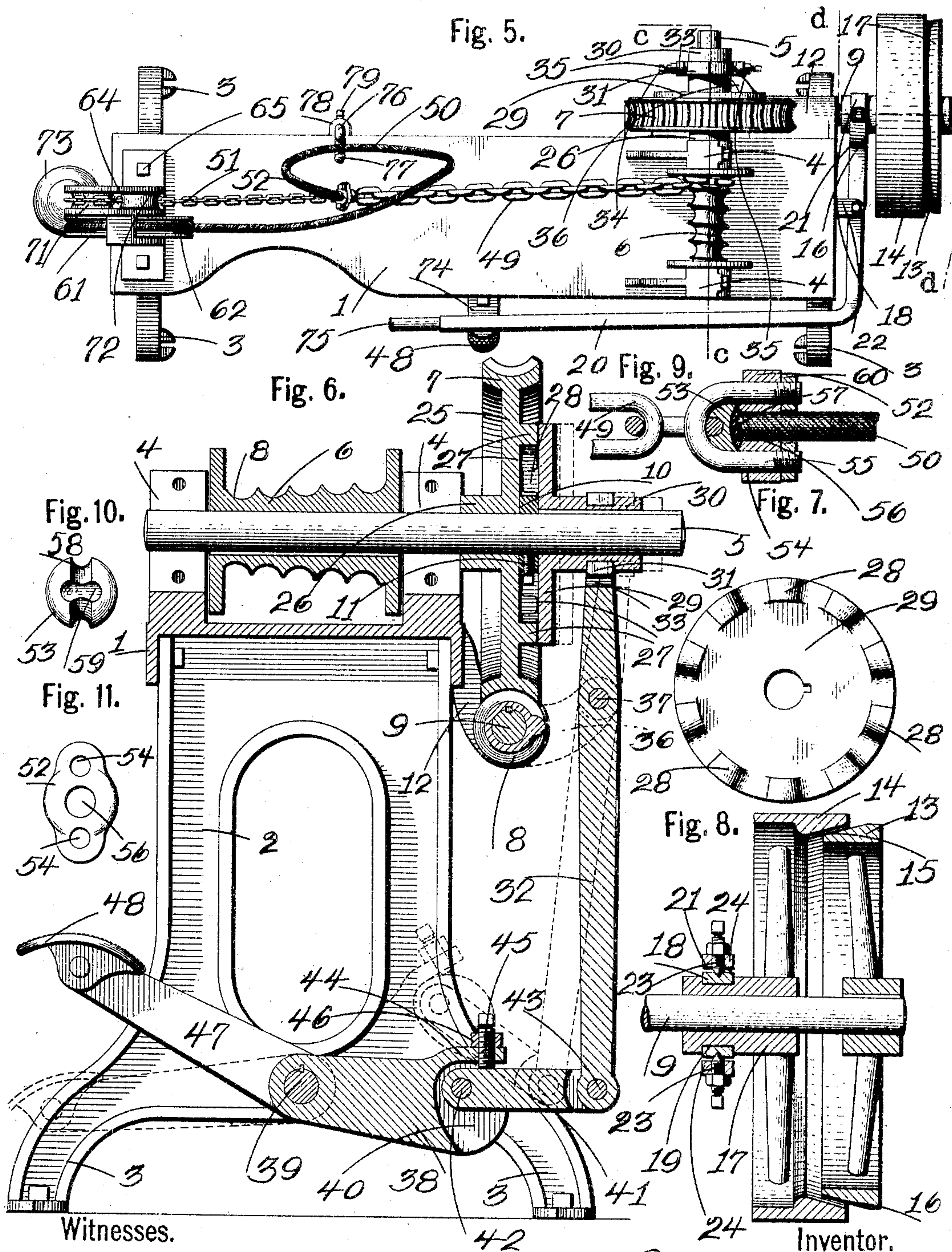
PATENTED JAN. 17, 1905.

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2 SHEETS—SHEET 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

BRITAIN HOLMES, OF BUFFALO, NEW YORK.

BARREL-STAVE-COMPRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 780,037, dated January 17, 1905.

Application filed April 10, 1903. Serial No. 151,963.

To all whom it may concern:

Be it known that I, BRITAIN HOLMES, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Barrel-Stave-Compressing Machines, of which the following is a specification.

This invention relates to a machine for tightening and compressing the staves of a barrel preparatory to putting on the truss-hoops by means of a cable which is drawn around the barrel to compress the staves and held in position until the truss-hoop has been put in place, when the cable is released, and is an improvement upon my Patent No. 239,099.

The principal improved feature has reference to a means for shortening or lengthening the cable to regulate the size of the loop of the cable, so that it can be adjusted to different sizes of barrels.

The invention also relates to certain details of construction, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which a preferred adaptation of the invention is shown.

Figure 1 represents a side elevation of the machine. Fig. 2 is an end elevation of the machine. Fig. 3 is a vertical section on line *aa*, Fig. 4. Fig. 4 is a vertical section through the device for adjusting the cable for different sizes of barrels on line *bb*, Fig. 3. Fig. 5 is a plan view of the machine. Fig. 6 is an enlarged transverse section through the machine on line *cc*, Fig. 5, the cable and cable-adjusting device being omitted. Fig. 7 is an enlarged detached inside view of the toothed wheel which is keyed to the main shaft. Fig. 8 is an enlarged detached section through the friction-pulleys on line *dd*, Fig. 5, also showing a fragment of the driving-shaft. Fig. 9 is an enlarged detached section through the coupling for connecting the chain and cable. Fig. 10 is a detached plan view of the upper member of the coupling. Fig. 11 is a detached plan view of the lower member of the coupling.

In referring to the drawings for the details of construction like numerals designate like parts.

The frame of the machine is composed of a

bed or top 1 and side members 2, provided with legs 3, which may be bolted or otherwise secured to the floor. Bearings 4 are fastened near one end of the bed 1, and a main shaft 5, carrying a spool or drum 6 keyed thereon, is mounted in the bearings 4. A worm-wheel 7 is loosely mounted upon the main shaft 5 and meshes with a worm 8, keyed or otherwise secured to a horizontal driving-shaft 9. A collar 10 is fastened to the shaft 5 by a set-screw 11 and prevents the longitudinal movement of the wheel 7 on said shaft. The shaft 9 is mounted in bearings 12, extending from the bed 1, and a wheel or pulley 13 is keyed to the outer end of the shaft. A pulley 14, having a hub 17, is loosely mounted on the shaft 9 and has a beveled portion 15 on one side, which is adapted to frictionally engage with the beveled periphery 16 of the wheel 13. The hub 17 of the pulley 14 is loosely encircled by a collar 18, which fits in a groove 19 in the hub, and an angular lever 20, having a forked end 21, is pivoted to a lug 22, extending from one end of the frame. The forked end 21 of the lever 20 partially encircles the collar 18, to which it is fastened by means of cone-pointed set-screws 23, which pass through the forks 21 and are locked in place by lock-nuts 24.

The worm-wheel 7 is provided with a web 25, which connects the periphery of the wheel to the hub 26, and a series of teeth 27 are formed on one side of the web 25. A disk 29, provided with a hub 30, is slidably mounted on the shaft 5 and has a series of teeth 28 projecting therefrom, which engage with the teeth 27 on the web 25. The hub 30 is provided with a groove, in which a collar 31 loosely fits, and a vertically-extending lever 32 has a forked end 33, which is fastened to the collar 31 by means of cone-pointed screws 34. These screws pass through the forks 33 of the lever 32 and are rigidly locked in place by lock-nuts 35. The lever 32 is pivoted to a lug 36, extending from the bearings 12, by means of a pin 37, and the lower end of said lever is pivoted to one member of a toggle-joint device. This device consists of a short weighted lever 38, mounted at one end upon a longitudinally-extending rock-shaft 39, jour-

naled in the end pieces 2, the lever 38 being provided with a depression 40 in its opposite end, in which one end of a lever 41 is pivoted by a pin 42. The opposite end of the lever 41 is pivoted to the lower end of the lever 32 by a pin 43. The lever 38 is provided with a lug 44, projecting from its rear end, through which a set-screw 45 is passed and is locked in place by a lock-nut 46. The purpose of the screw 45 is to adjust the levers 38 and 41 relatively to each other. The shaft 39 is rocked by means of a lever 47, having one end fastened to the shaft and is provided with a foot-treadle 48 at the opposite end.

A chain 49 is fastened at one end to the spool or drum 6, and a cable 50 and chain 51 are coupled to the other end of the chain 49 by means of a coupling device. The coupling device is so arranged that it serves to connect both the chains and the cable together. This coupling device is preferably formed as shown in Figs. 9, 10, and 11 and consists of two members 52 and 53, the member 52 being provided with side openings 54, through which the ends of a U-shaped bolt 55 pass, and a central opening 56, through which one end of the cable 50 passes. The member 53 has a concaved bottom 57 and a curved depression 58, in which the curved portion of the U-shaped bolt 55 fits, and a short transverse depression 59, into which a portion of one of the links of the chain 49 fits. The end of the cable 50 which passes through the opening 56 is spread, and the member 53 is fastened to the member 52 by nuts 60, which screw upon the ends of the U-bolt. The cable is bent to form a loop to surround the barrel, and its opposite end is fastened to a wheel 61, which is provided with a peripheral groove 62 and pivotally mounted by a pin 63 in an upright frame portion 64, secured to the bed 1 by bolts 65. The cable 50 is adapted to be lengthened or shortened to allow for different sizes of barrels by turning the wheel 61 and winding or unwinding the cable in the groove 62, the wheel 61 being locked in its adjusted position by a pin 66, which passes through openings 67 in the upright frame portion 64 and through one of a series of openings 68 in the wheel 61. The pin 66 has a groove near one end, and a latch 69, pivoted to one side of the portion 64, is adapted to fit in the groove 70 and prevents the withdrawal of the pin 66. By this construction one end of the looped cable is connected to a tightening-chain 49 and the opposite end is connected to an adjusting-wheel 61, so the size of the loop is regulated by adjusting one end of the cable, and the loop is drawn tight around the barrel by moving the opposite end of the cable. Upper and lower pulleys 71 and 72 are mounted in the portion 64, and the chain 51, having one end connected to the chain 49, passes under the pulley 72 and over the pulley 71, the other end being provided with a weight 73. The purpose of the

weighted chain 51 is to enlarge the loop to release the barrel and also to unwind the chain 49 from the spool or drum 6.

The angular lever 20 is provided with a handle 75 at one end and is supported on a short horizontally-extending plate 74, bolted to the bed 1.

A vertically-extending rod 76, provided with a hook portion 77 at its upper end, is secured in a lug 78, extending from the rear of the bed 1 by a set-screw 79, the object of which is to provide a support for the cable while the barrel is being removed and another put in place.

A device which acts as a brake upon the wheel 13 is provided, which consists of an angular lever 80, pivoted to a bracket 81, fastened to one of the side members 2 of the machine. A weight 82 is supported upon one end of the lever 80, and the opposite end of said lever bears against the periphery of said wheel 13. The object of this device is to prevent the momentum of the wheel 13 from rotating the shaft 9 after the friction-pulley 14 has been-disengaged.

The spool or drum is preferably provided with a spiral peripheral groove in which the chain 49 is wound.

The operation of the machine is as follows: A barrel is put in position and the cable placed around the same. The lever 20 is then moved to bring the friction-wheels 13 and 14 into engagement with each other, which revolves the shaft 9, causing the worm 8 to be rotated, which in turn revolves the worm-wheel 7. The teeth 27, projecting from the web on the wheel 7, and the teeth 28 on the disk 29 being in engagement with each other, the shaft 5 begins to revolve and winds the chain 49 upon the spool or drum 6, thereby drawing the cable 50 around the barrel. When the staves have been compressed sufficiently, the lever 20 is moved to disengage the friction-wheels 13 and 14, which stops the rotation of the shafts 9 and 5. The truss-hoop is now placed in position upon the barrel, and the foot-lever 47 is depressed, which rocks the shaft 39 and by means of the toggle-jointed levers 38 and 41 and the lever 32 disengages the teeth 27 and 28 and permits the shaft to revolve, the tension of the cable 50 serving to unwind the chain 49 from the spool or drum 6.

The chief advantages of this improved machine reside in the adjustment of one end of the loop whereby the loop can be regulated to the size of the barrel and can be quickly tightened upon the barrel by winding up the chain attached to the opposite end of the loop, the frictional operating means whereby the machine is quickly and easily controlled, and the novel coupling arranged to connect to the chains and the cable.

I claim as my invention—

1. In a machine of the character described, a frame, a winding-spool journaled in said

frame, a chain connecting at one end to said winding-spool, a looped cable connecting to the opposite end of said chain, a rotary adjustable means for holding the opposite end of the looped cable, and means for rotating the winding-spool, substantially as set forth.

2. In a machine of the character described, a frame, a winding-spool journaled in said frame, a chain connecting at one end to said winding-spool, a looped cable connecting to the opposite end of said chain, a wheel having operative connection to the opposite end of the looped cable, means for adjusting said rotating wheel to change the size of the cable-loop, and means for rotating the winding-spool to tighten the loop around a barrel, substantially as set forth.

3. In a machine of the character described, a frame, a winding-spool journaled in said frame, a chain connecting at one end to said winding-spool, a looped cable connecting to the opposite end of said chain, a wheel having support from the frame to which the opposite end of the looped cable is fastened, means for locking said wheel in its adjusted position, and means for rotating the winding-spool, substantially as set forth.

4. In a machine of the character described, a frame, a winding-spool journaled in said frame, a chain connecting at one end to said winding-spool, a looped cable connecting to the opposite end of said chain, an upright frame portion at one end of the frame, a wheel pivotally mounted in said frame portion to which the opposite end of the looped cable is secured and having a series of openings, a locking-pin adapted to fit in any one of said series of openings, and means for rotating the winding-spool, substantially as set forth.

5. In a machine of the character described, a frame, a winding-spool journaled in said frame, a chain connecting at one end to said winding-spool, a looped cable connecting to the opposite end of said chain, an upright frame portion at one end of the frame, a wheel pivotally mounted in said frame portion to which the opposite end of the looped cable is secured and having a series of openings, a locking-pin adapted to fit in any one of said series of openings, a pivotal latch for fastening the pin against withdrawal, and means for rotating the winding-spool, substantially as set forth.

6. In a machine of the character described, a frame, a winding-spool journaled in said

frame, a chain connecting at one end to said winding-spool, a looped cable connecting to the opposite end of said chain, an upright frame portion at one end of the frame, a wheel pivotally mounted in said frame portion to which the opposite end of the looped cable is secured and having a series of openings, a locking-pin adapted to fit in any one of said series of openings and having a groove, a latch pivoted to the frame portion and adapted to fit in the groove and means for rotating the winding-spool, substantially as set forth.

7. In a machine of the character described, a frame, a winding-spool journaled in said frame near one end thereof, a wheel having rotatable support near the opposite end of said frame, a chain attached at one end to the winding-spool, a looped cable connected at one end to the opposite end of the chain and at the other to the wheel, means for rotating the winding-spool and means for locking the wheel in its adjusted position.

8. In a machine of the character described, the combination with a looped cable, of a tightening device having connection to one end of said loop and a regulating device having connection to the opposite end of the loop, substantially as set forth.

9. In a machine of the character described, a frame, a cable-loop, and two winding devices having support in the frame and each having connection to one end of the cable-loop.

10. In a machine of the character described, a frame, a cable-loop and two winding devices having support in the frame and each having connection to one end of the cable-loop, one of said winding devices serving as a tightening means and the other as an adjusting means for regulating the loop to the size of the barrel.

11. A machine of the character described having a machine-frame, a shaft journaled in said frame, a spool mounted on said shaft, a chain attached at one end to said shaft, a cable and a second chain connected to the opposite end of the first-mentioned chain, said cable being looped to fit around a barrel, a weight attached to the opposite end of the second chain, and an adjustable holding means for the opposite end of the cable, substantially as set forth.

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Witnesses:

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