

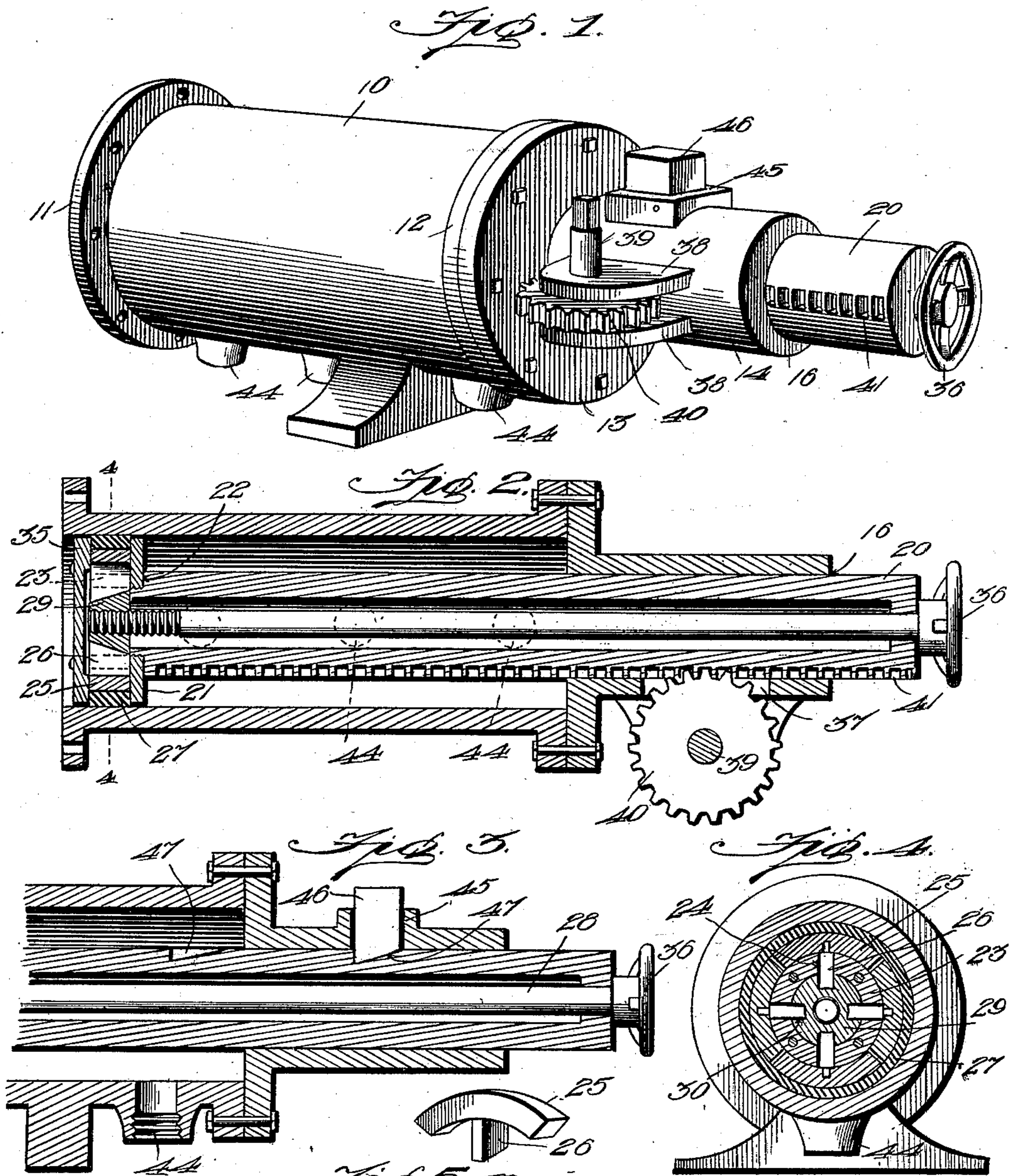
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Patented July 10, 1900.

W. M. CARROLL.
CUT-OFF FOR STEAM FEEDS FOR SAWMILLS.

(Application filed Apr. 14, 1900.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM MARION CARROLL, OF BEAUMONT, TEXAS.

CUT-OFF FOR STEAM-FEEDS FOR SAWMILLS.

SPECIFICATION forming part of Letters Patent No. 653,212, dated July 10, 1900.

Application filed April 14, 1900. Serial No. 12,891. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MARION CARROLL, a citizen of the United States, residing at Beaumont, in the county of Jefferson and State of Texas, have invented a new and useful Cut-Off for Steam-Feeds for Sawmills, of which the following is a specification.

This invention relates to the steam-feeds for sawmills in general, and has specific reference to the steam-feed cylinder, one object of the invention being to provide a construction in which the capacity of the cylinder may be varied under different conditions to effect an economy of steam.

A further object of the invention is to provide a shiftable piston in which the packing thereof may be expanded to hold the piston in position and may be readily contracted to permit of movement of the piston.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a perspective view showing the back end of the steam-feed cylinder and illustrating the means for moving the piston inwardly. Fig. 2 is a central longitudinal section of the cylinder and the mechanism thereof, taken in a horizontal plane. Fig. 3 is a longitudinal section of the rear end of the rear section of the cylinder, taken at right angles to Fig. 2 and showing the operative position of the latch plug or pin. Fig. 4 is a transverse section on line 4-4 of Fig. 2. Fig. 5 shows in perspective the follower of the piston and one of the arc-shaped piston-sections which is moved radially of the cylinder by the follower.

Referring now to the drawings, 10 represents the rear end section of the feed-cylinder, having a flange 11 at one end for engagement with the flange of the succeeding section and having also a flange 12 at its opposite end, against which is clamped the head 13 of the cylinder through the medium of the usual clamping-bolts or machine-screws.

From the head 13 of the cylinder 10 there extends a sleeve 14 in axial alinement with the cylinder, and the bore of which sleeve is of less diameter than that of the cylinder and is equal to that of a perforation 16, formed centrally of the cylinder-head, and in prac-

tice the head and sleeve are preferably formed integral, although this is not essential.

In the cylinder 10 is arranged a tubular piston-rod 20, which is adapted to project through and beyond the outer end of the sleeve 14, as shown, said rod fitting snugly in the sleeve, but with sufficient looseness to permit it to be moved freely.

The inner end of the rod 20 is reduced in exterior diameter and threaded and engaged with these threads in a disk 21, which lies against the shoulder 22 at the inner end of the reduced portion of the piston-rod and with its outer face in the plane of the end of the rod. A cylindrical hub is formed upon the disk and projects beyond the outer end of the rod, and this hub is serrated longitudinally to form a plurality of segmental sections 23, separated by interspaces 24, for a purpose that will be presently explained. Upon this serrated hub of the disk 21 are disposed a plurality of segmental packing-blocks 25, disposed to cover the interspaces 24, and which cooperate to form a complete circle, and each of these segmental blocks is provided with an inwardly and radially extending lug 26, which may be formed upon or secured to the block and shaped to fit slidably in the interspaces 24. These lugs 26 thus act as guides for the segmental blocks and prevent displacement of the blocks rotatably of the hub. Upon the blocks is disposed a packing-strip 27 of usual packing material.

In order to adjust the packing to cause it to hold the piston against movement or to permit it to slide freely and to adjust its steam-holding effect, a screw-shaft 28 is passed through a perforation in the rear closed end of the piston-rod and extends with its forward screw-threaded end within the inclosure of the hub of the disk 21, and on this threaded end is screwed a follower 29. This follower 29 has a plurality of radial grooves 30, which correspond in number and arrangement to the interspaces 24 and the lugs 26, and they receive the inner extremities of the lugs. The inner extremities of the lugs 26 are cut slantingly or beveled all in the same direction and the lower walls or bottoms of the slots or grooves 30 are all beveled in an opposite direction, so as to directly receive

the inner ends of the lugs, and hence if the follower is moved in one direction through the hub of disk 21 it will act to press the lugs 26, and therewith the segmental blocks, outwardly, and if the follower is moved in an opposite direction it will permit the blocks to be moved inwardly. This reciprocation of the follower is secured by rotating the screw-shaft first in one direction and then in the other, and to permit the follower to operate without displacement from the end of the hub of disk 21 a second disk 35 is screwed onto the outer end of the hub. It will thus be seen that the packing material is held upon radially-movable blocks operating between two disks and that by operation of the screw-shaft the blocks are operated to press the packing against the inner face of the cylinder, and thus hold the piston from movement or cause a desired tight fit. A hand-wheel 36 at the rear end of the screw-shaft facilitates operation of the shaft.

To facilitate reciprocation of the piston within the cylinder, an opening 37 is formed in one side of the sleeve 14, and at the sides of this opening are formed ears 38, in which is journaled a key-shaft or crank-shaft 39, carrying a gear-wheel 40, which projects into the inclosure of the sleeve through the opening 37, and this gear-wheel engages a rack 41, formed longitudinally of the piston-rod. Hence by engaging a crank or key with the shaft 39 it may be rotated to feed the rod, and therewith the piston, longitudinally of the cylinder.

In one face of the cylinder there is formed a line of steam-ports 44, and by adjusting the piston to different points of the length of the cylinder and operating the packing to clamp it in such position one or more of the ports may be thrown into or out of operative relation to the feed mechanism.

To provide a positive lock for the piston, an opening 45 is formed through the sleeve 14 at its upper side, and in this opening is disposed a latch-pin 46, the body of which fits the opening slidably and the lower end of which is formed to engage any one of a number of openings 47 in the adjacent face of the piston-rod. Thus by dropping the latch into place the piston-rod may be held positively at corresponding points of its reciprocatory movement.

It will of course be understood that in practice various modifications of the specific structure shown may be made and that any suitable materials and proportions may be used for the various parts without departing from the spirit of the invention.

What is claimed is—

1. The combination with a steam-feed cylinder having a plurality of ports, of a piston in the cylinder and adapted for movement over the ports to cut them into and out of op-

erative relation to the cylinder, a rack carried by the piston and a gear engaging the rack for holding the piston at different points of its movement.

2. The combination with a steam-feed cylinder having a plurality of ports and a sleeve extension, of a piston in the cylinder for movement over the ports to cut them into and out of operative relation to the cylinder, a rack carried by the piston, and a gear-wheel mounted upon the sleeve and engaging the rack to operate the piston.

3. The combination with a steam-feed cylinder having a plurality of ports, of a hollow piston-rod slidably disposed in the cylinder a disk engaged with the rod and having a hub provided with longitudinal slots, a follower slidably disposed in the hub and having slots alining with those of the hub, segmental blocks mounted upon the hub and having lugs which enter the slots of the hub and follower, the ends of the lugs and the bottoms of the follower-slots being beveled in opposite directions, packing-strips upon the blocks, and a screw rotatably mounted in the rod and engaging the follower to reciprocate it and move the blocks and strips radially.

4. The combination with a steam-feed cylinder having a plurality of ports, of a hollow piston-rod slidably disposed in the cylinder, a disk engaged with the rod having a hollow hub provided with longitudinal slots extending entirely through the hub, a follower slidably disposed within the hub and having slots registering with those of the hub, a disk engaged with the outer end of the hub to prevent outward displacement of the follower, segmental blocks mounted upon the hub and having lugs which enter the slots of the hub and follower, the ends of the lugs and bottoms of the slots being oppositely beveled, a screw passed through the rod and engaged with the follower to reciprocate it and move the blocks radially, a rack carried by the rod and a gear-wheel engaged with the rack for reciprocating the rod.

5. The combination with a steam-feed cylinder having a plurality of ports, of a piston in the cylinder and having a tubular rod, means for operating the rod to move the piston over the ports and cut them into and out of operative relation to the cylinder, means for operating the rod to move the piston, and means carried by the rod for expanding the piston to hold it at different points of its movement.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM MARION CARROLL.

Witnesses:

LEE BLANCHETTE,
HAL G. LAUD.