

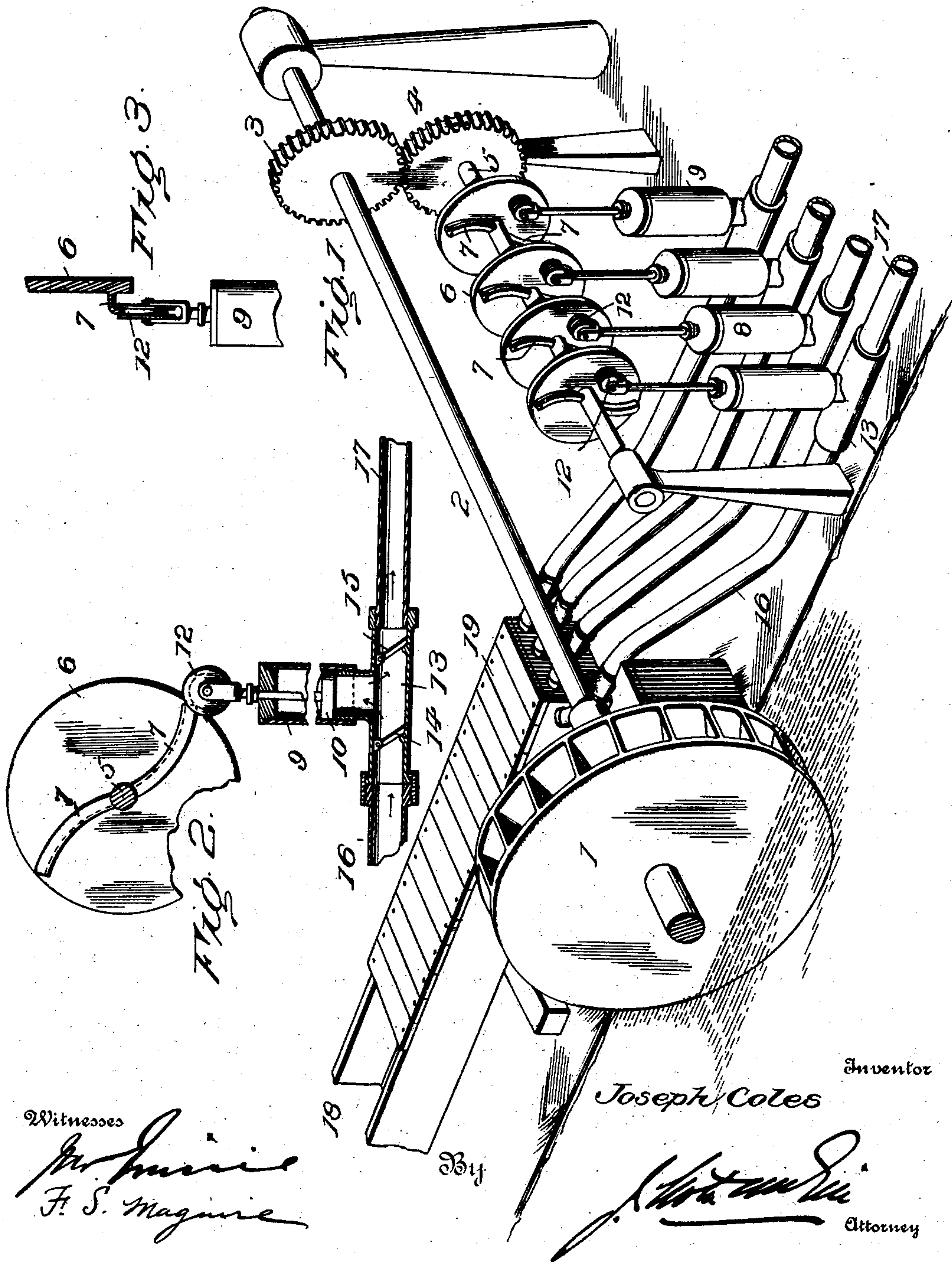
No. 699,079.

Patented Apr. 29, 1902.

J. COLES.
WATER DISTRIBUTION.

(Application filed Oct. 15, 1901.)

(No Model.)



UNITED STATES PATENT OFFICE.

JOSEPH COLES, OF GLENWOOD SPRINGS, COLORADO.

WATER DISTRIBUTION.

SPECIFICATION forming part of Letters Patent No. 699,079, dated April 29, 1902.

Application filed October 15, 1901. Serial No. 78,726. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH COLES, of Glenwood Springs, in the county of Garfield and State of Colorado, have invented certain new and useful Improvements in Water Distribution; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has for its object the provision of simple and highly-efficient means for distributing water for irrigating or other purposes along or near the bed of a running stream, and is especially designed for use in isolated sections, as where it is difficult or impossible to obtain operative power other than that derived from the current of the river or stream.

The invention comprehends bringing water under a head or pressure to a series of pumps positively operated to effect the distribution of the water, the pistons of the pumps being after each positive operation returned to their starting-points independent of the driving mechanism by the force or pressure of the inflowing water. The operating-shaft of the pumps is driven by a power-shaft geared thereto, such shaft carrying a water-wheel partly immersed in the river.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective with parts broken away. Fig. 2 is an enlarged vertical sectional view through one of the pumps and the cam-carrying shaft. Fig. 3 shows the upper end of one of the pumps with a portion of the actuating-cam indicated in section.

Referring to the drawings, 1 designates a power-wheel, and 2 its shaft, so mounted that the wheel will be partly immersed in the running stream to be revolved by the force of the current. A gear-wheel 3 on this shaft meshes with a gear-wheel 4 on a counter-shaft 5 below and parallel with but considerably shorter than the main shaft 2. On this counter-shaft is a series of cam-disks 6, each disk having on one face two cam-flanges 7.

Beneath the counter-shaft is a series of pumps 8, each pump comprising an upright

cylinder 9 and a single piston 10. On the rod of each piston is a grooved wheel 12, the several wheels being positioned in such relation to the cam-disks that the cam-flanges of the latter will bear thereon to force the pistons downwardly to the lower limit of movement, whereupon the cam-flange by which a piston was forced will free the wheel, and the piston will be free to be moved to its upper position. Into the lower end of each pump-cylinder opens a T 13. In the laterals of each T are two check-valves 14 and 15, and to that end of the T adjacent valve 14 is connected a supply-hose 16, while to the end of the lateral in which valve 15 is located is secured a discharge-pipe 17 for conveying water over a hill or to any desired point. In the ascent of the piston valve 14 will open, while in the descent such valve will be closed and valve 15 opened to allow the water drawn into the cylinder in the upward movement of the piston to be forced into the discharge or distributing pipe.

18 designates a flume of suitable length located at the side of the river or stream and from which it leads at a point some distance above the pumps and their operative parts. The flume is set on an incline throughout either its whole or a portion of its length, so that the water will have a considerable fall or head at its closed or delivery end 19. From this end of the flume leads the series of hose or pipes 16, which open into the receiving-laterals of the T's of the pumps. Any suitable means may be employed for controlling the flow of the water into the flume, and the latter may be readily positioned to obtain the desired flow or head of water to be delivered to the pumps under sufficient pressure to force the pistons upward after being depressed by and when free of their actuating-cams.

In practice the power-shaft is revolved by the action of the stream on its wheel, and motion being transmitted to the counter-shaft it and the disks thereon are rotated in one direction. As the several pistons are engaged by a cam-flange of their respective cam-disks they are forced downward, thereby forcing the water out of the cylinders by valves 15 and into the distributing-pipes 17. As the pistons reach the downward limits of their

movements they are each freed from one cam, and the force of the water entering the cylinders and their T's from the flume will drive the pistons upward before they can be engaged by the second cam-flange of their respective disks. The back pressure in the discharge or distributing pipes serves to hold valve 15 seated in the upward movements of the pistons. As soon as the pistons reach the upward limits of movement they will be again forced downward by engagement of the second cam-flange of their respective disks. In other words, each piston is forced downward twice in one revolution of the counter-shaft.

The advantages of my invention are apparent. It will be seen that I have provided simple and inexpensive means for securing the distribution of water for irrigation or other purposes in isolated localities and arid regions. In such places it is frequently difficult if not impossible to obtain feasible or practicable means for discharging water from a river or other stream; but by my invention it will be seen that with but very little expense most effective means may be employed for distributing water. While I have both shown and described the essential features of a preferred form of construction, yet it is obvious that changes may be made without departing from the scope or spirit of my invention.

I claim as my invention—

1. The combination with a power-shaft, of a counter-shaft operated thereby, a series of cams on such counter-shaft, a series of pumps having their piston-rods engaged by such

cams, means for supplying water to the pumps under pressure, distributing-pipes leading from the several pumps, and check-valves in each pump, one on the inlet and the other on the outlet side of the pump-cylinder, substantially as set forth.

2. The combination with a power-shaft, of a counter-shaft operated thereby, a series of cams on such counter-shaft, a series of pumps having their piston-rods engaged by such cams, a flume for supplying water to the pumps under pressure, distributing-pipes leading from the several pumps, and check-valves in each pump, one on the inlet and the other on the outlet side of the pump-cylinder, substantially as set forth.

3. The combination with the shaft having a series of disks each disk having double cam-flanges, of a series of pumps, a grooved wheel on the piston-rod of each pump with which such cam-flanges are designed to engage to force the pistons in one direction, a flume for supplying water under pressure, connections between the flume and the pumps, distributing-pipes leading from the several pumps, and two check-valves in each pump, one between the flume connection and the pump-cylinder and the other between the latter and the distributing-pipe, substantially as set forth.

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

JOSEPH COLES.

Witnesses:

GRAFTON L. MCGILL,
FRANK S. MAGUIRE.