

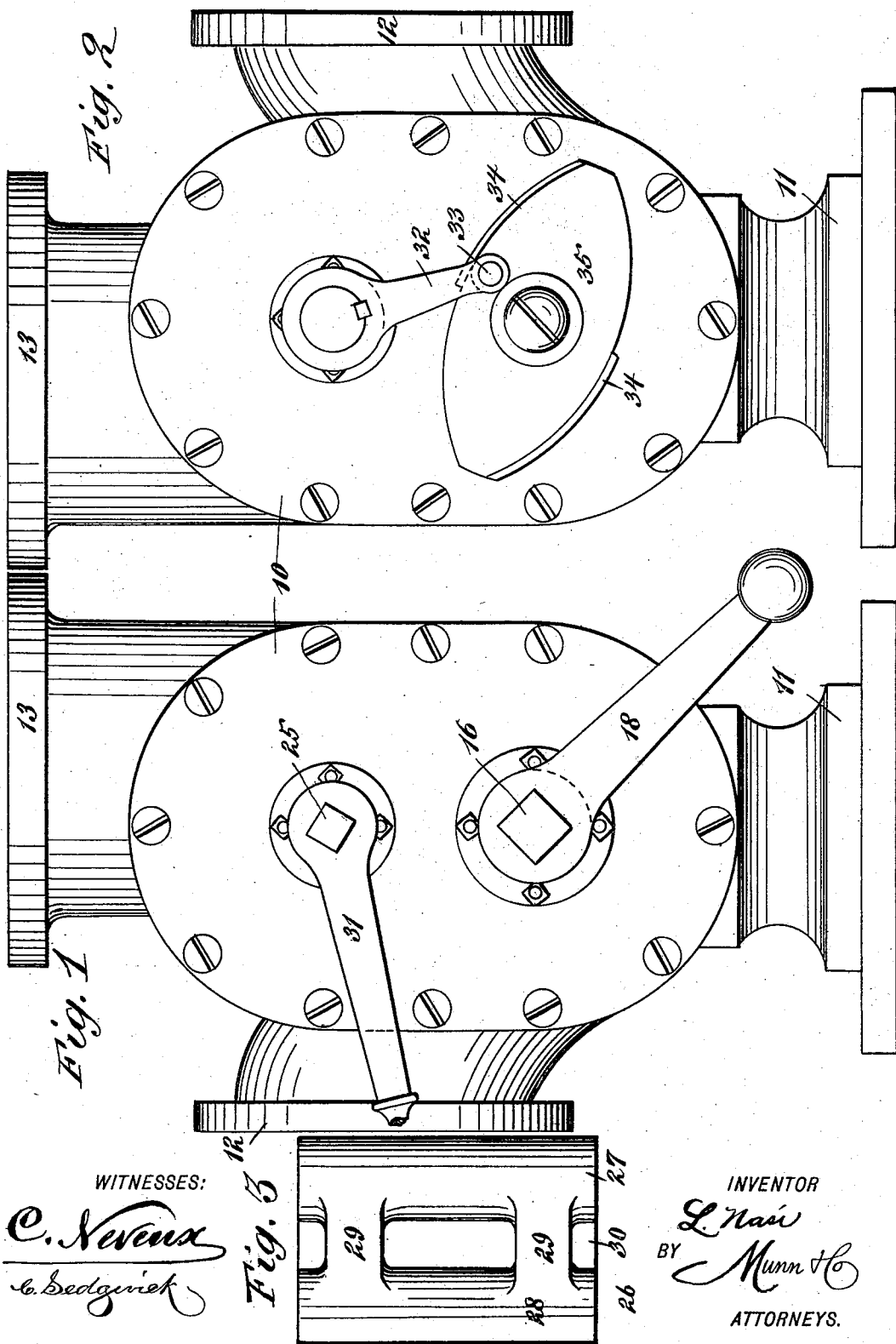
(No Model.)

2 Sheets—Sheet 1.

L. NASI.
PUMP.

No. 506,533.

Patented Oct. 10, 1893.



WITNESSES:

C. Neven
C. Sedgwick

Fig. 3

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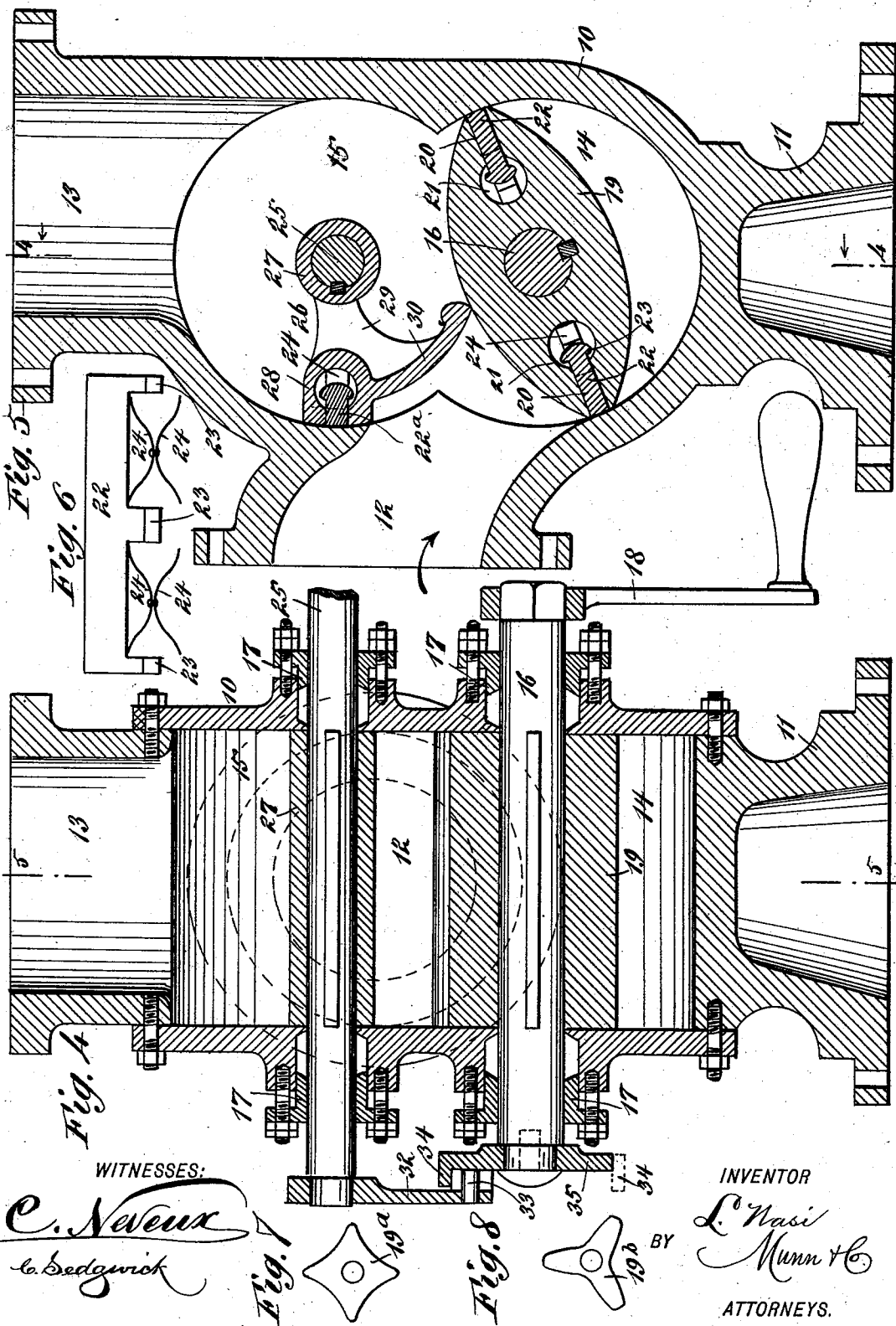
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

LUIGI NASI, OF PANAMA, COLOMBIA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 506,533, dated October 10, 1893.

Application filed October 25, 1892. Serial No. 449,924. (No model.)

To all whom it may concern:

Be it known that I, LUIGI NASI, of Panama, Colombia, South America, have invented a new and Improved Pump, of which the following is a full, clear, and exact description.

My invention relates to improvements in rotary pumps, and the object of my invention is to produce a cheap, simple and substantial pump which will pump rapidly, work easily, and will be very durable.

To this end, my invention consists in a pump, the construction of which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the pump embodying my invention. Fig. 2 is a side elevation taken from the opposite side to that shown in Fig. 1. Fig. 3 is a plan of the pump valve. Fig. 4 is a cross section through the pump, on the line 4—4 in Fig. 5. Fig. 5 is a vertical section on the line 5—5 in Fig. 4. Fig. 6 is a detail plan of one of the packing slides which are used in the piston and valve; and Figs. 7 and 8 are end views of modified forms of pistons which may be used.

The pump casing 10, is provided with removable side plates, and it has a suitable base 11 on which it rests. In one side of the casing is an inlet 12, and at the top is an outlet 13. Within the casing are the pump chambers 14 and 15, each being of a nearly cylindrical shape and the chambers communicate at the top place of junction. The driving shaft 16 extends centrally through the lower chamber 14, being held to turn in suitable stuffing boxes 17 on the pump casing, and the shaft 16 has a driving crank 18 at one end, although a pulley or other driving mechanism may be connected to it.

The shaft 16 carries an ellipsoidal piston 19, having flattened sides which fit snugly against the flat sides of the casing, and the end portions of the piston revolve close to the curved sides of the chamber 14. This piston has at its ends and extending longitudinally into it, slots 20 which terminate at their inner ends in transverse bores 21, and in the slots are packing slides 22, one of the slides being shown in detail in Fig. 6, which slides

have inwardly extending arms terminating in shoulders 23, and the shoulders by contacting with the outer walls of the bores 21, prevent the removal of the slide. Each slide is pressed outward by springs 24, these being of any suitable kind, but the springs shown in the drawings are bent leaf springs which are attached together at the center, and the ends of which diverge and press respectively against the slide and against the piston. The slide may be inserted endwise into the piston, and the shoulders will thus slide freely into the bore 21. It will be seen that the pressure of the springs will hold the slide in close contact with the wall of the chamber 14, and a water tight joint will thus be made.

Extending centrally through the chamber 15, is a shaft 25, which is parallel with the shaft 16, and this shaft carries a valve 26 which extends forward toward the inlet 12. The valve 26 has a cylindrical portion or sleeve 27, which is keyed to the shaft 25, and it has a thickened front portion 28, the front wall of which is shaped to fit the wall of the chamber 15. The parts 27 and 28 are connected by arms 29.

Extending downward and rearward from the front portion 28 of the valve is a curved wing 30, which extends endwise through the chamber 15, and the lower end of the wing is thickened and rides upon the piston 19. The thickened end 28 of the valve is slotted and bored in the same way that the piston 19 is slotted and bored, and it carries a packing slide 22^a exactly like the slide 22 described above, and this slide is held in close contact with the wall of the chamber 15 by a spring 24. The shaft 25 is also journaled in stuffing boxes 17, and to start it when the water is first introduced into the pump, a crank 31 may be used; but the shaft at its outer end is preferably provided with a crank 32, which at its free end has an inwardly-extending stud 33, (see Figs. 2 and 4) and this stud engages flanges 34 which are produced on opposite sides and ends of an ellipsoidal cam 35, this corresponding in shape to the shape of the piston 19 and being secured rigidly to one end of the shaft 16. It will thus be seen that when the piston is turned, it will strike the valve wing 30 and raise the valve, and when the end of the piston passes the wing,

one of the flanges 34 will engage the stud 33 of the crank 35 and continue the movement of the valve, the flange and crank causing the valve to turn so as to follow closely the surface of the piston 19, or the crank 31 may be used in starting the pump so as to work the valve back and forth, and after the pump is started the crank may be removed and reliance placed upon the back water pressure to hold the valve down.

The ellipsoidal piston shown in the drawings is preferably employed as it is simple and durable, but a nearly rectangular piston with dishing sides 19^a, as shown in Fig. 7 may be used. A three-armed piston 19^b, as shown in Fig. 8, or almost any deviation in form of the piston may be made as the valve will follow the irregularities of the piston so far as they are regular or in lines parallel with the shaft of the piston.

The operation of the pump is as follows: The pump being set in motion, the water flows in through the inlet 12 and is sucked downward by the revolution of the piston 19, the packing slide 22 at one end of the piston moving snugly in the chamber 14, so as to create a suction, and when the opposite end of the piston comes around to the inlet, the water which has fallen to the under side of the piston will be caught by the second packing slide 22 and carried forward, this being repeated at every half revolution of the piston until the chambers 14 and 15 are filled and the water is flowing regularly and rapidly through the outlet 13. It will be noticed by reference to the drawings, that the radius represented by a line drawn from the center of

the shaft 25 to the outer edge of the part 28 of the valve 26 is greater than the radius represented by a line drawn from the center of the shaft to the outer edge of the wing 30, consequently the back pressure of water on the valve 26 will tend to hold the valve in close contact with the piston, and after the pump is once filled it will work successfully if the mechanism described for actuating the valve were dispensed with and the valve simply arranged to press by gravity and water pressure on the piston. In starting the pump the valve 26 may be manipulated by the hand crank 31 until there is sufficient water to hold the valve in place, after which the crank 31 may be removed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a pump, the combination, with the pump casing having a suitable inlet and outlet, and the revoluble piston held to turn in the casing and having its shaft extending through the sides of the casing, of a second shaft held parallel with the piston shaft, a valve secured to the second shaft and arranged to ride upon the piston, a crank secured to the outer end of the valve shaft, and a flanged cam secured to the piston shaft and adapted to engage the crank of the valve shaft so as to hold the valve in contact with the piston, substantially as described.

LUIGI NASI.

Witnesses:

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