

No. 758,022.

PATENTED APR. 19, 1904.

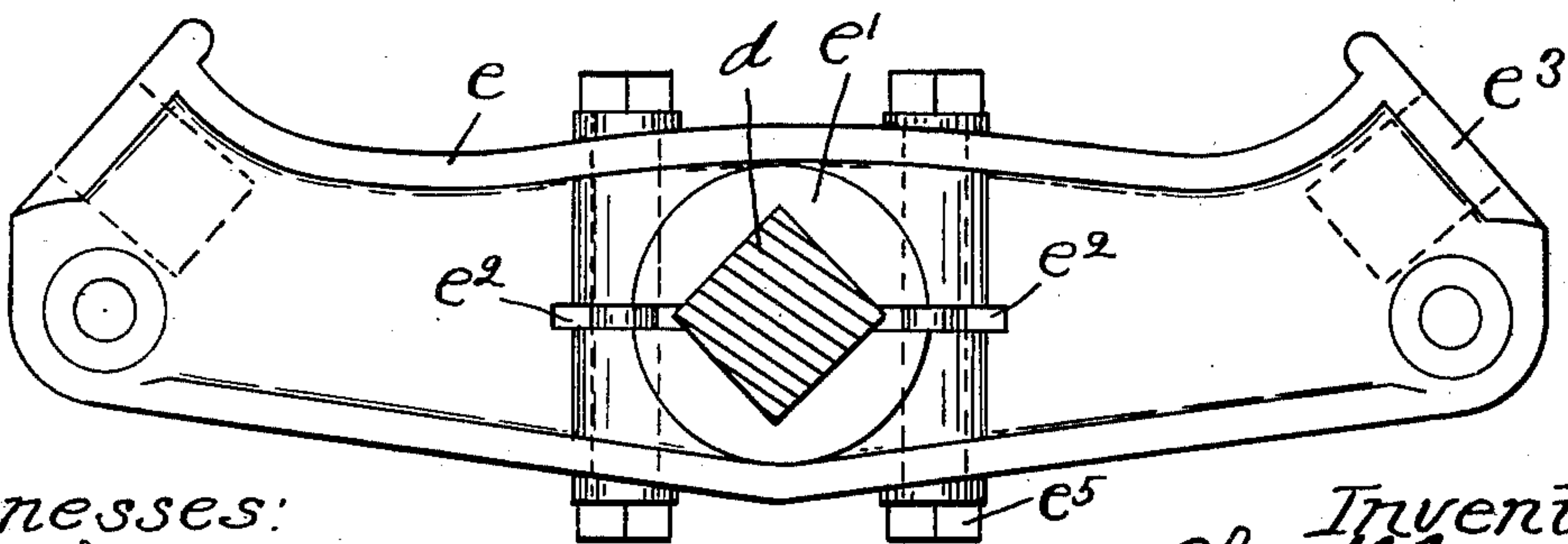
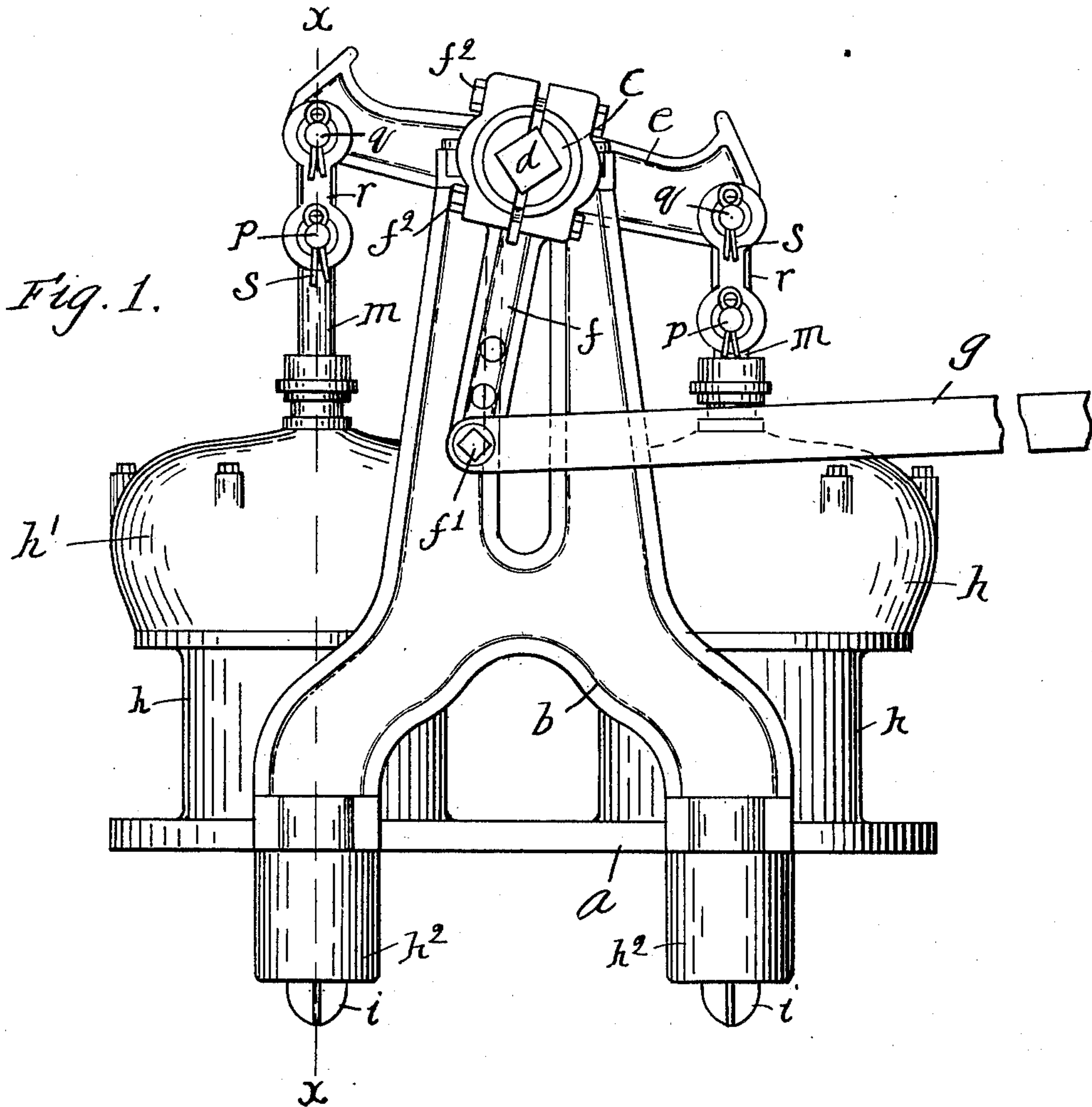
C. H. SANBORN & W. F. RUNNELLS.

SHIP PUMP.

APPLICATION FILED DEC. 24, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:  
*H. B. Davis.*  
*Wm. M. Piper*

*Fig. 2.*

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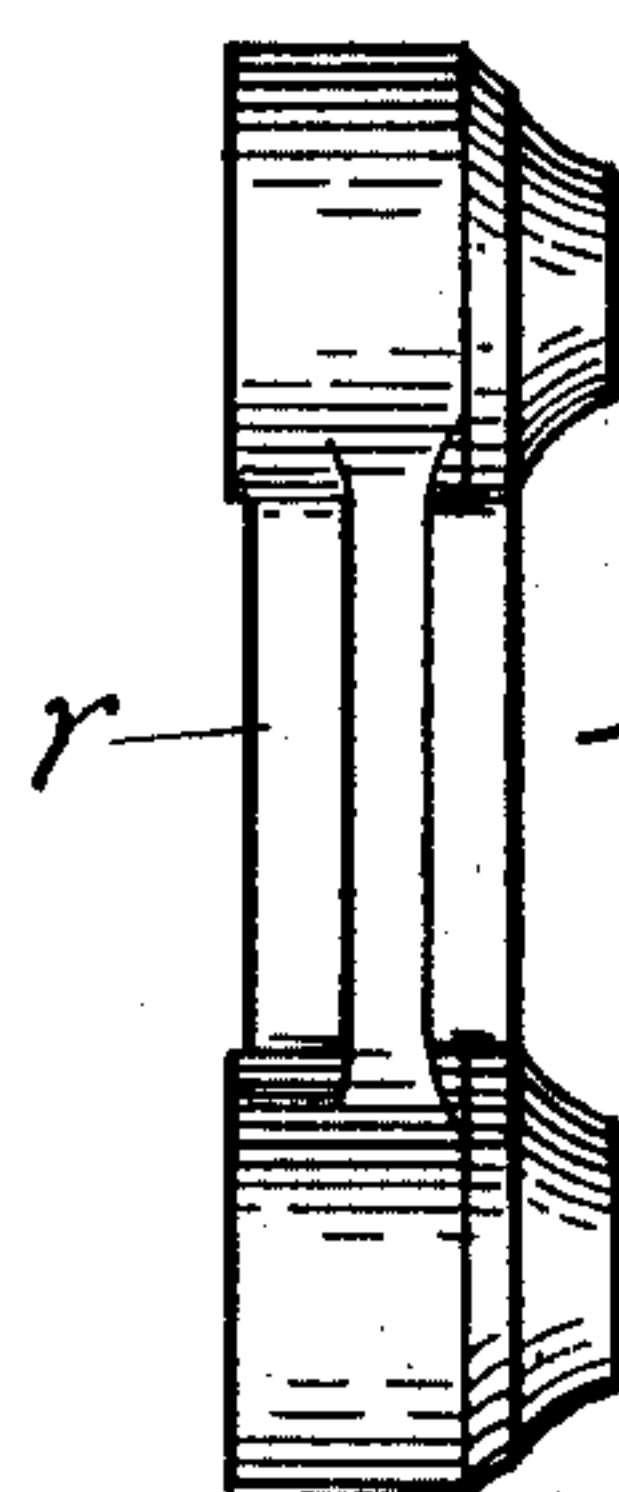
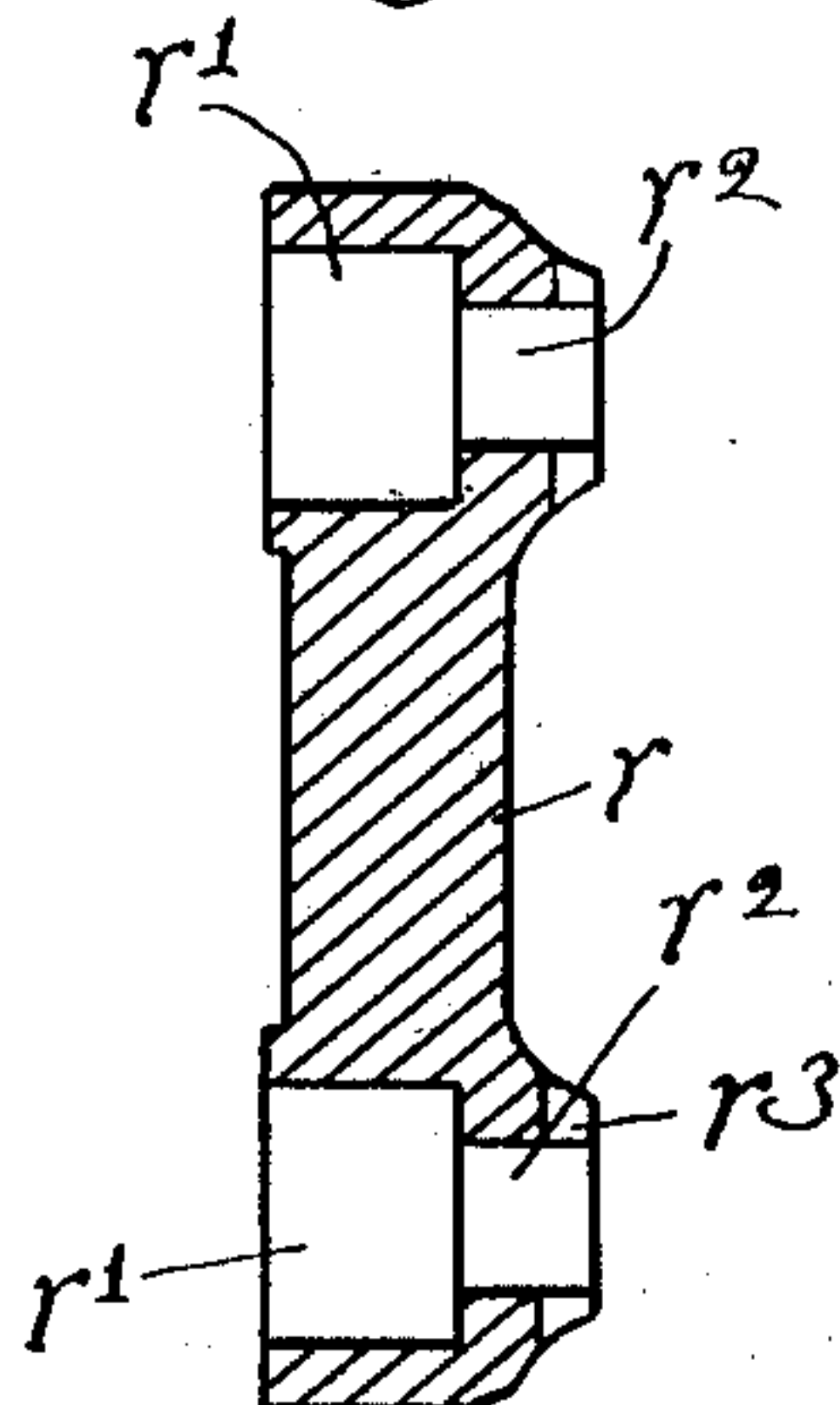
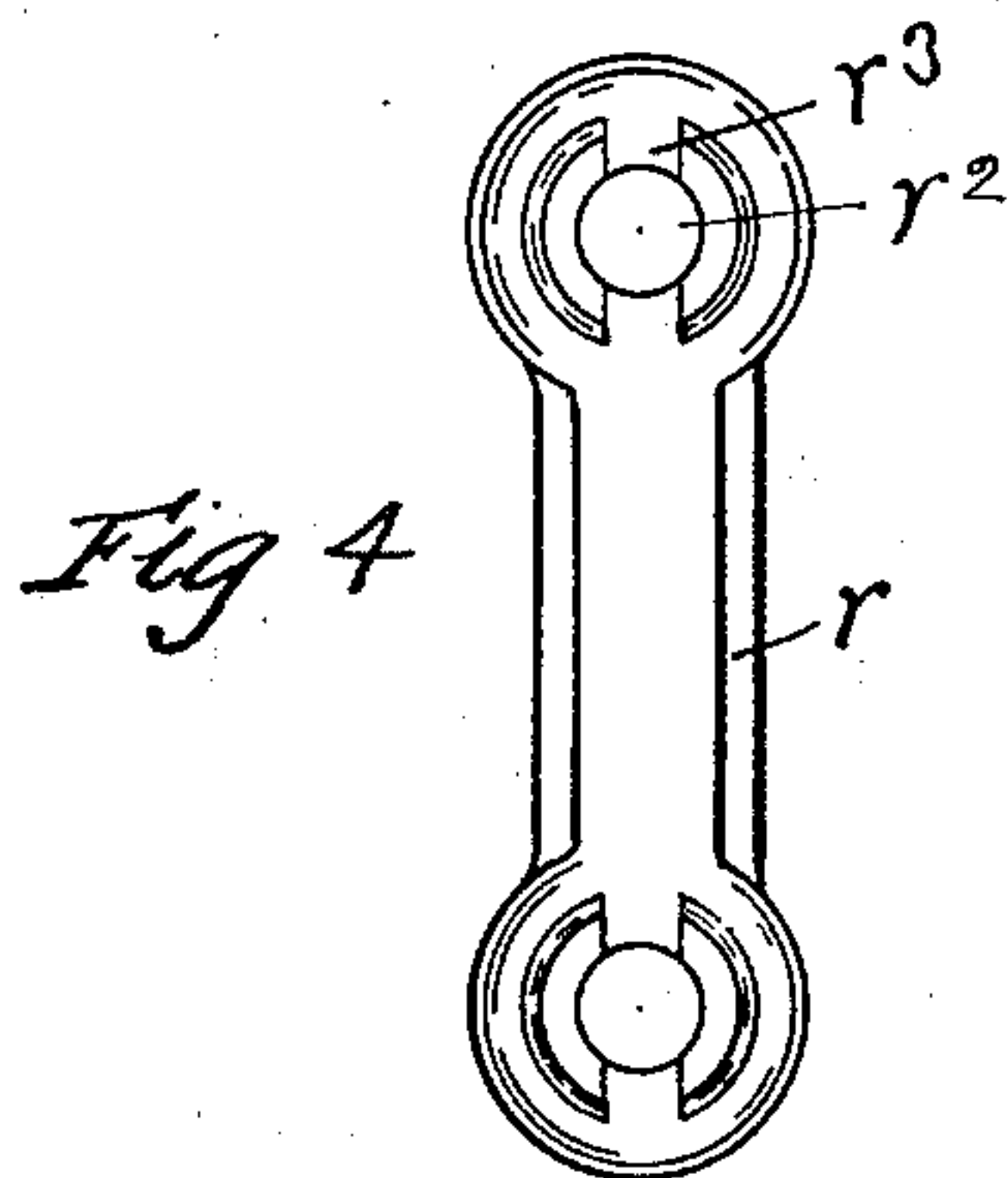
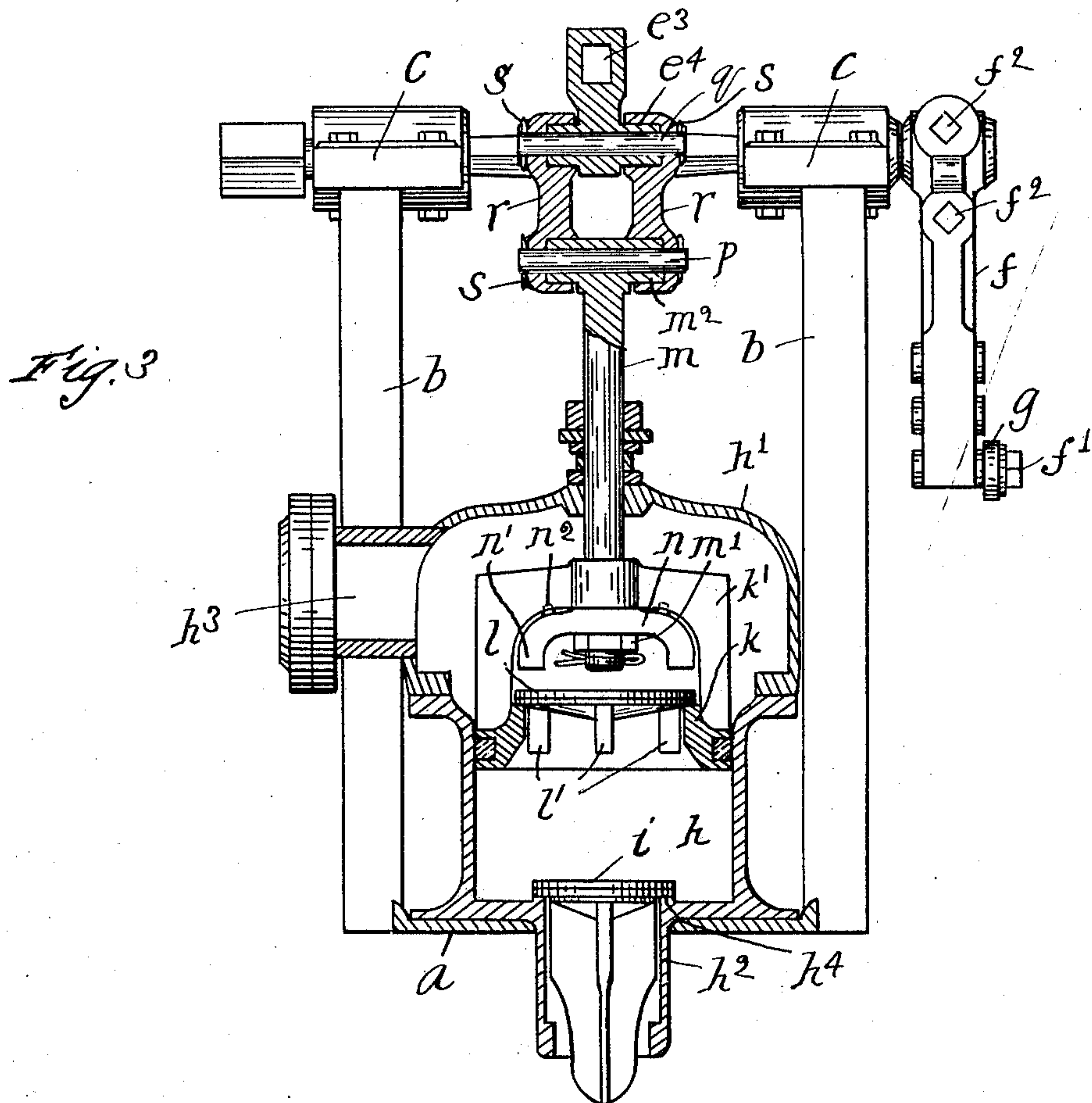
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Witnesses:  
*H. B. Davis*  
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# UNITED STATES PATENT OFFICE.

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A CORPORATION OF MASSACHUSETTS.

## SHIP-PUMP.

SPECIFICATION forming part of Letters Patent No. 758,022, dated April 19, 1904.

Application filed December 24, 1903. Serial No. 186,422. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES H. SANBORN and WILLIAM F. RUNNELLS, both of Newburyport, county of Essex, State of Massachusetts, have invented an Improvement in Ship-Pumps, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to certain improvements in pumps which are especially designed to be used on board ships as bilge-pumps, and has for its object the provision of a form of pump which is simple and durable and is unlikely to get out of order.

In the drawings, Figure 1 is a side elevation of a double-cylinder lift-pump made according to our invention. Fig. 2 is a detail view of the main pump-lever. Fig. 3 is a vertical section on the line  $x-x$  of Fig. 1, and Figs. 4, 5, and 6 are detail views of one of the piston-connecting links.

The base  $a$  of the machine is provided with two standards  $b$ , one at each side thereof, in the upper end of which two journal-boxes  $c$  are mounted. A shaft  $d$  is journaled in said boxes, said shaft being made square or angular in form in its middle portion and at each end. A pump-lever  $e$  is mounted on the middle of said shaft, said lever being provided with a square or angularly-shaped aperture  $e'$  at its middle portion in which the shaft  $d$  is adapted to be fitted, and slots  $e''$  are also provided therein which lead from opposite sides of the aperture  $e'$  longitudinally of the lever, said slots preferably being formed therein when it is cast. Bolts  $e^5$  are passed through said lever at right angles to said slots and adjacent said aperture  $e'$ , so that when they are tightened the central portion of the lever may be sprung together, so as to clamp opposite portions thereof upon the shaft to hold it in position. Sockets  $e^3$  are formed in each end of the lever  $e$  for the reception of ordinary hand-levers when it is desired to work the pump by hand. A crank-arm  $f$  is secured to one end of the shaft  $d$  outside of the adjacent

standard  $b$ , said crank being provided with an angularly-shaped aperture in which the squared end of the shaft is fitted, the head of the crank being slotted, so that the halves thereof may be sprung together by means of bolts, as  $f''$ , to clamp the same upon the shaft. The crank-arm is provided with a series of holes, in one of which a crank-pin  $f'$  is located to provide a pivotal connection between said arm and a connecting-rod  $g$ , said connecting-rod being drawn back and forth by means of a crank or eccentric upon an engine. (Not shown.)

Piston-chambers  $h$  are mounted upon the base  $a$  at each end thereof, and as each chamber and the parts associated therewith are identical the description of one will suffice. Chamber  $h$  is provided with an inlet  $h^2$  and a discharge-port  $h^3$ , and a valve-seat  $h^4$  is formed on the upper end of the inlet-port on which a foot-valve  $i$  is seated. A piston-head  $k$  is fitted to the cylindrical portion of the cylinder, and said head is provided with the usual piston-valve  $l$ , said valve being provided with a series of guiding-lugs  $l'$ , so that the valve will always be guided properly to its seat. A yoke  $k'$  is formed integral with the piston-head, and a piston-rod  $m$  passes through said yoke and extends through the upper end of the chamber above the cylinder. A valve-stop  $n$  is arranged beneath the under side of the yoke  $k'$ , the piston-rod  $m$  passing there-through and clamping the same to the yoke by means of a nut  $m'$  or any other suitable means, said valve-stop being provided with depending arms  $n'$ , having horizontal flat faces at their lower ends so arranged that when the valve is lifted upon the downward movement of the piston the ends of the arms  $n'$  will be engaged by the upper side of the valve and prevent the same from being lifted to such an extent that the lower ends of the lugs  $l'$  on the valve  $l$  will be lifted above and will catch onto the valve-seat in the piston-head. The upper side of said valve-stop is provided with two lugs  $n^2$ , which engage correspondingly-formed recesses in the under



side of the yoke, so as to hold the same from turning.

The upper end of the piston-rod  $m$  is provided with cylindrical projections  $m^2$  at each side thereof, forming a T-shaped head, said head being longitudinally bored to provide a bearing for a link-pin  $p$ , which passes there-  
 5 through. The lever  $e$  is provided with transversely-extending and oppositely-arranged cylindrical bosses  $e^4$ , which are centrally bored and with the main part of the lever provide a bearing for a link-pin  $q$ . The piston-rod  $m$  and the end of the beam are connected by means of a pair of oppositely-arranged links  
 10  $r$ , each link being provided at one side and in each end with a circular recess  $r'$ , into which the projections  $m^2$  on the piston-rod and bosses  $e^4$  on the lever  $e$  are fitted, and with a concentrically-arranged aperture  $r^2$ , through which  
 20 said pins  $p$  and  $q$  pass, respectively. The diameter of said projections  $m^2$  and bosses  $e^4$  is such that they fit into said recesses  $r'$  and provide a bearing for the ends of the link. The pins  $p$  and  $q$  are secured to and held from  
 25 turning in said links by means of cotter-pins  $s$ , which pass through each end of the pins  $p$  and  $q$  and are arranged in recesses  $r^3$ , formed in the outer side of the links. By this means a double bearing is provided at each end of  
 30 the link connection between the piston and beam, so that a maximum wearing-surface is secured, the bearing for the pins  $p$  and  $q$  extending from opposite outer ends of the projections and bosses  $m^2$   $e^4$ , respectively, and  
 35 an independent bearing for the links also being provided on the outer sides of the bosses  $m^2$   $e^4$ . By this means a form of connection is provided which is particularly durable and rigid and which provides a bearing-surface of  
 40 large area, so that the joints will wear a considerable length of time without becoming loose.

The operation of the pump will be obvious and is the same as that of ordinary pumps of  
 45 this character, and therefore needs no description. The length of stroke of the pump may be lengthened or shortened by varying the point of connection between the connecting-rod  $g$  and the crank-arm, or in case it is  
 50 desired to operate the pump by hand the rod

$g$  may be disconnected and the hand-levers applied.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination in a pump of an operating-lever having a pair of bosses projecting from opposite sides thereof, said bosses having outer circular bearing-surfaces, a pair of oppositely-arranged links journaled at one end  
 55 on said bearing-surfaces, a link-pin extending through and having a bearing in said lever and bosses, the axis of said pin being concentric with said outer bearing-surfaces, and the ends of said pin being fitted in and secured to  
 60 said links, and a piston-rod pivotally connected to the opposite ends of said links, substantially as described.

2. In combination with a pump, an operating-lever and a piston-rod each having oppositely-arranged bosses, said bosses having outer circular bearing-surfaces, a pair of links journaled at their ends on said bearing-surfaces, a pair of link-pins respectively journaled in said lever and rod, and their corresponding  
 70 bosses, the axial line of said pins being concentric with the outer bearing-surfaces of the bosses in which they are journaled, and the ends of said pins being fitted in and secured to  
 75 said links, substantially as described.

3. In a lift-pump, a piston-head, having a port, a vertically-movable valve closing said port, and having depending guiding-lugs, a yoke connected to said head, a valve-stop comprising a horizontal portion, and two depending  
 80 arms, a piston-rod passing through said yoke and the horizontal portion of said stop and connected thereto, said arms being arranged to engage the valve and prevent its upward movement when its guiding-lugs are  
 85 partly withdrawn from said port, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES H. SANBORN.  
 WILLIAM F. RUNNELLS.

Witnesses:

W. M. HICKS,  
 DAVID P. PAGE.