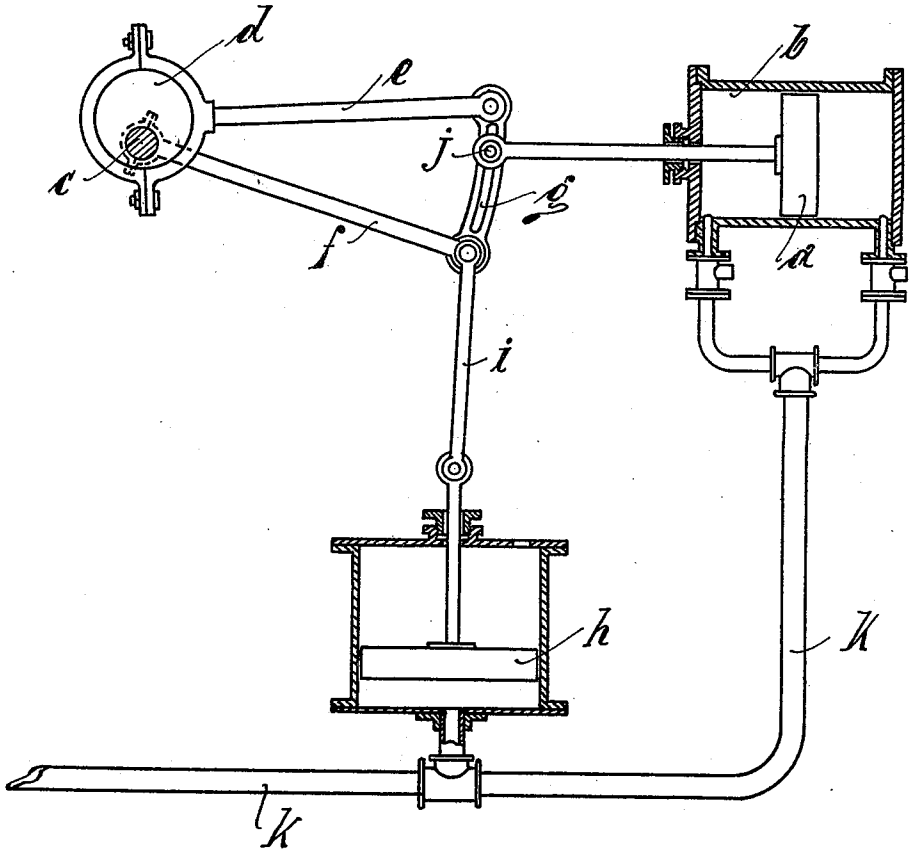
No. 635,258. Patented Oct. 17, 1899.

C. O. LANGE.

AUTOMATIC CUT-OFF FOR PUMPS.

(Application filed Sept. 28, 1898.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

CARL O. LANGE, OF HAMBURG, GERMANY, ASSIGNOR TO GEORG WILHELM ONKEN, OF SAME PLACE.

AUTOMATIC CUT-OFF FOR PUMPS.

SPECIFICATION forming part of Letters Patent No. 635,258, dated October 17, 1899.

Application filed September 28, 1898. Serial No. 692,110. (No model.)

To all whom it may concern:

Be it known that I, CARL O. LANGE, civil engineer, a subject of the German Emperor, residing at Hamburg, in the German Empire, have invented new and useful Improvements in Automatic Cut-Offs for Pumps Used in Pumping Gas, Air, or Liquids, (for which I have made application for German patent filed the 11th day of July, 1898,) of which the following is a specification.

My invention relates to improvements in automatic cut-offs for pumps used in pumping gas, air, or liquids, whereby the lowering of the pressure to a certain point brings the pump into action and the raising of the pressure to a certain point stops the same.

The invention consists in the construction and novel combination and arrangements of parts hereinafter described, and shown in the drawing.

In the drawing, *b* represents a pump-cylinder, from which air is pumped into a pipe *k*, connected therewith by branches having openings into the cylinder near its opposite ends. Within the cylinder is a reciprocating piston-head *a*, which is connected with one end of a piston-rod *j*, which slides in suitable bearings in the head of the cylinder. The opposite end of the piston-rod is provided with a pin which fits loosely in the curved slot of a link *g*. The upper end of this link is pivotally connected to one end of a rod *e*, to the opposite end of which is secured a ring *d*, which is positioned eccentrically to the shaft *c*, about which it travels. The lower end of said link is pivotally secured to one end of a rod *f*, the opposite end of which is secured to the shaft *c*, which is driven by any suitable power and means. To the lower end of the link *g* is also pivoted the upper end of a piston-rod *i*, on the lower end of which is secured a piston *h*, which reciprocates in a suitable cylinder, which is connected with the air-pipe *k*, as clearly shown. In order to allow for the rocking movement of the link, the piston-rod *i* is divided in two parts, which are pivotally joined together.

In the operation of my device the travel of the eccentric will impart a rocking movement to the link *g*, which when the piston-rod *j* is in the upper end of the slot will cause a reciprocating movement to said rod, which will be transmitted to the piston *a*. Should the pressure of air in the pipe *k* exceed the quantity desired or utilized, the excess will flow into the cylinder carrying the piston *h* and force the latter upward, and its upward movement will carry the piston-rod *i* and necessarily push in the same direction the link *g*. As the latter is thrown upward the point of connection of the piston-rod *j* with the link is changed from the upper end of the latter, where its stroke is long, to the lower end, where it is short, thus controlling the length of stroke of said piston-rod. If the upward movement of the link should continue until the rod *j* is in the same horizontal plane with the rod *f*, there would be no appreciable stroke imparted to the rod *j* by the rocking of the link. This condition would reduce the air-pressure in the pipe *k* to the extent desired, when the piston *h* would fall and permit the return of the link *g* to its normal position relative to the piston-rod *j*, when the pumping operation would be continued.

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

A cut-off for pumping mechanism, consisting of a drive-shaft, a ring eccentrically mounted on said shaft, a slotted link, a rod connecting one end of the link with the eccentric ring, a rod connecting the other end of the link with the shaft, a pump piston-rod loosely secured in the slot of said link and carrying a piston, a cylinder for said piston, a piston exposed to the pump-pressure connected with one end of the slotted link, a cylinder for said piston and pipe connections between said cylinders, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CARL O. LANGE.

Witnesses:
E. H. L. MUMMENHOFF,
W. P. LEONHARD.