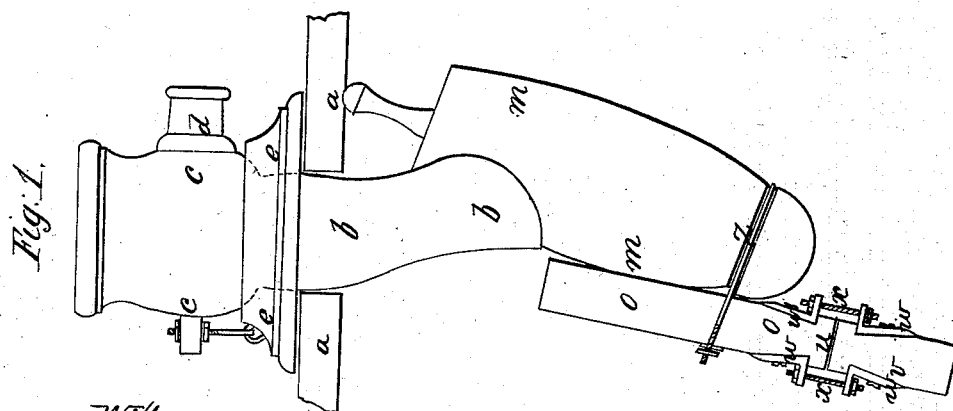
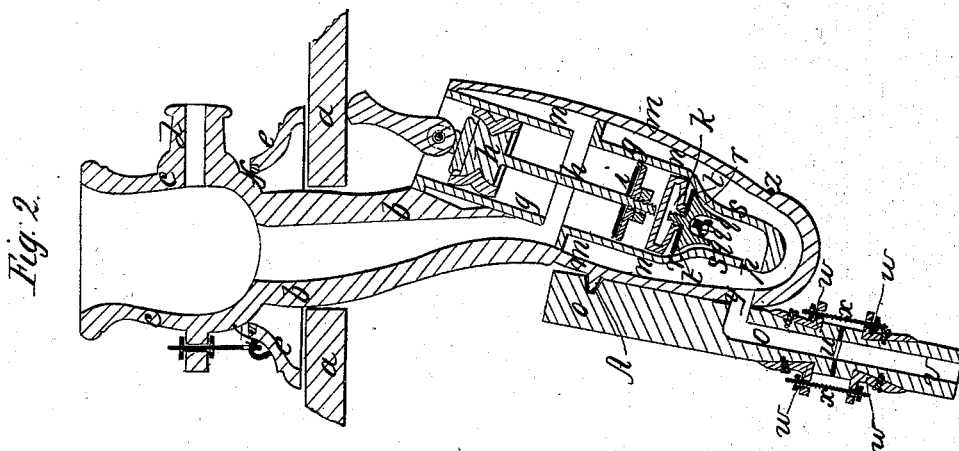


*J. Edson,*  
*Ship Pump,*  
*No. 49,393,      Patented Aug. 15, 1865.*



*Witnesses;*  
*Sam<sup>l</sup> M. Barton*  
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# UNITED STATES PATENT OFFICE.

JACOB EDSON, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN SHIPS' PUMPS.

Specification forming part of Letters Patent No. **49,393**, dated August 15, 1865.

*To all whom it may concern:*

Be it known that I, JACOB EDSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pumps for Ships and other uses; and I do hereby declare that the following description, taken in connection with the accompanying plate of drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The present invention relates to certain new and useful improvements in pumps for ships and other uses. In a vessel the pump is usually set in the "well-room," that conforms in inclination to the rake of the mast, and to economize space the pump has to be made at the same angle; but this is manifestly inconvenient, because no one pattern of pumps will apply to the well-rooms of different vessels, as the angle which the mast makes with the decks is not often similar in any two cases.

My first improvement, then, consists in so constructing and arranging the head of the pump, or that portion which is above the deck, with regard to a deck plate or collar in which it is held, as to allow the pumps to be set and fastened at any desired inclination, and yet form a water-tight joint between the deck and the pumps.

I have also made other improvements in the valve, valve-box, or support, and other parts of the pump, which will be hereinafter referred to and fully explained.

The figures of the accompanying plate of drawings represent my improvements as applied to a ship's pump. Figure 1 is a side elevation of the pump, and Fig. 2 a central vertical section of the same.

*a a* in the drawings represent the deck of a vessel, through which passes the tube *b b* of the pump, having attached to it below the deck the pumping apparatus, induction-tube, &c., and above the deck the receiver or head *c c* of the pumps and eduction-pipe *d*. The bottom part of the receiver *c c* is formed of a curved or ball-shaped form, as shown in the drawings, and rests in and upon a collar or deck plate, *e e*, containing a rubber or other suitable pack-

ing, *f f*, the two forming a swing-joint, and also one that prevents water from passing down through it. Thus it will be seen that the receiver, and consequently the whole lower part of the pump, can be set at any desired angle in the collar *e e*, and with the deck, so as to conform to the rake of the mast. The pump, when once set at the desired inclination, can be fastened by any suitable means.

The pumping apparatus is placed in a cylinder, *g g*, attached to and communicating with the tube *b b*. In the cylinder *g g* are a piston, *h*, the upper valve, *i*, lower valve, *k*, and valve-box or support *l*. The cylinder *g g* is incased in an outer cylinder, *m m*, leaving a space or chamber, *n n*, between the two. *o o* is the induction-tube, communicating both with the chamber *n n*, and through an aperture, *p*, with the cylinder *g g*. The valve-box or support *l* to the lower valve, *k*, is formed in a peculiar manner, having a series of prongs, *q q*, which bear with a slightly elastic force upon the seat *r s*, made in the cylinder *g g*, being compressed and sprung into the same so as to be self-holding. The valve-box *l* flares considerably at its top surface, and is formed nearly straight at the bottom. The seat *r s* is constructed with two different tapers, the upper portion, *r*, being inclined and the lower portion, *s*, nearly straight.

Much difficulty has heretofore been experienced in pumps, from the fact of the lower valve-box becoming fixed in its seat, so that it could not be readily removed for cleansing or repairs. Thus, if the valve-box were made very tapering in its shape, so as to permit its easy removal, it would play up and down and cease to operate efficiently; and, on the other hand, if it had but a slight taper it would be liable to become wedged in its seat, so that it could not be easily lifted out, by being drawn down too far into the cylinder of the pump.

By the above-described arrangement of the peculiar valve-box *l* and its seat *r s*, the latter having two different tapers, or its equivalent in a curve, it will be seen that the upper portion of the valve-box, resting upon the upper part, *r*, of its seat, will prevent its being drawn down too far and wedged into the pump-cylinder, while the lower straight portion will, by the elastic force of the prongs *q q*, keep it in its seat, and yet allow of its being easily drawn out, when desired, for repairs, &c. The lower

valve, *k*, is, instead of being constructed and attached to the valve-box in the usual manner, formed of a simple disk, *t*, of leather, placed upon the top of the valve-box, overlapping the latter, and finding its seat upon the upper portion, *r*, of the seat *r s*. When the pump is in operation the overlapping portion of the disk *t* simply plays up and down by its flexibility, independently of the valve-box *l*, in the space over the latter and the seat *r*. The object of this arrangement is to allow any small obstructions to pass the valve without choking the space between it and its seat, which would otherwise be the case, and also to form a joint which needs no other packing between the valve-box *l* and the seat *r*.

In order to lengthen or splice the induction-tube *o o*, when occasion requires, and yet form a tight joint therein at the packing-ring *u*, I attach the lower tube, *v*, thereto by means of angular clamps *w w* let into shoulders cut in the two tubes *o v*, screw-bolts *x x* serving to draw the parts together. The arrangement of the angular clamps and shoulders in the tubes *o v* insures the forming of a tight joint between them, as they could not be so closely brought together without the bearing afforded to the clamps by the said shoulders, or if the clamps were simply fastened to the outer periphery of the tubes, as the clamps would be easily loosened from their fastenings by the strain of the screw-bolts *x x* upon them.

To form a tight joint between the upper induction-tube, *o o*, and cylinder *m m* at the passage *y*, I employ a band, *z*, placed as shown in Figs. 1 and 2, extending around both the

tube and cylinder, which serves to hold them firmly together, and in order to prevent the sagging of the induction-tube, and consequently the loosening of the joint at the point *y*, I extend the said tube upward, so as to cause a projection, *A*, in the cylinder *m m*, to engage with a suitable notch or socket therein, which effectually prevents its liability to sag.

Having thus described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. The combination and arrangement of the head of the pump, formed, as described, with the collar or deck-plate, the two forming a self-adjusting joint, that enables the pump to be set and fastened at any desired inclination, as set forth.

2. The lower valve-box or support, formed with a series of prongs sprung into and holding with an elastic force upon the valve-seat, as described.

3. The combination of a wedge-shaped valve-box or support with a seat having two different tapers, for the purpose of holding the valve-box or support firmly, and yet allowing of its easy removal for repairs, as described.

4. A flexible disk-valve, so arranged with regard to its seat and a suitable support as when closed to cover the space between the said seat and support, and to play independently of the latter, as described, and for the purpose specified.

JACOB EDSON.

Witnesses:

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