C. Perley,

Constructing Windlasses,

No. 6,873, Patented Nov. 13, 1849.

Fig. 1.

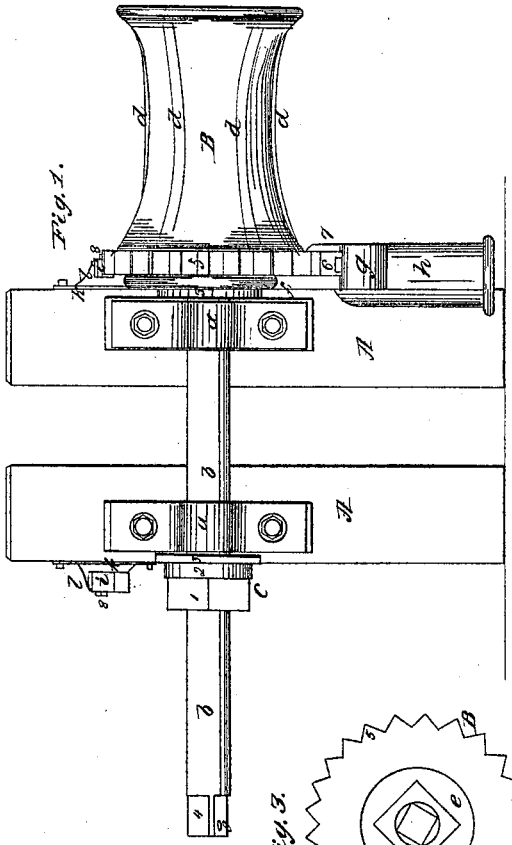


Fig. 3.

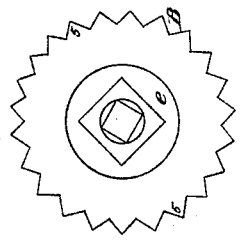
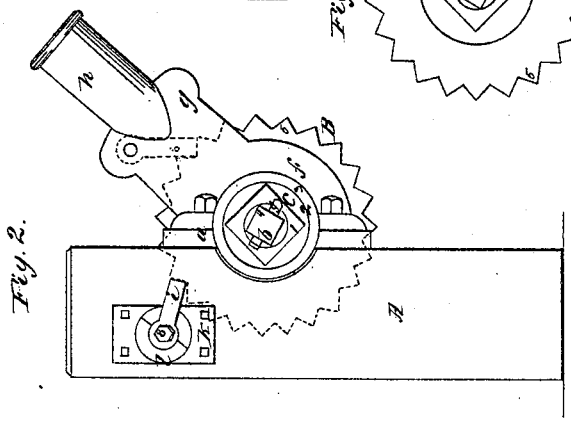


Fig. 2.



Witnesses

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CHARLES PERLEY, OF NEW YORK, N. Y.

METHOD OF FITTING THE HEAVING SOCKET AND HEAD OF WINDLASSES.

Specification forming part of Letters Patent No. 6,873, dated November 13, 1849; Reissued January 12,1864, No. 1603.

To all whom it may concern:

Be it known that I, CHARLES PERLEY, of the city and State of New York, machinist, have invented and made and applied to use certain new and useful improvements in the mechanical arrangement of the parts employed about what are usually known as the "Heads of Windlasses," and in the mechanical means of operating the same by manual power, the first part of such improvements consisting in so forming the head and parts that connect it to the shaft on which the windlass rotates that when the head itself becomes useless from accident or otherwise it can be removed and replaced by another without the loss and injury of the other parts; the second part of these improvements consists in a mode of mounting and fitting the heaving pawls with hand spike sockets, so that they can be easily replaced if injured and when not in use they are entirely out of the way of receiving any injury from accidental and extraneous causes, and yet are always in place ready for duty, for which improvements I seek Letters Patent of the United States, and that the said improvements and the mode of constructing and using the same are fully and substantially set forth and shown in the following description and in the drawings annexed to and making part of this specification, wherein—

Figure 1 is a front elevation of the windlass bit and shafts, without the intermediate barrel, this not being needed, to explain my improvements. One head is shown in place for use, the other end of the shaft is shown with the head removed, to exhibit the construction of the connecting parts more plainly; Fig. 2, is an endwise elevation of the parts, as they would appear at the same end of Fig. 1; the Fig. 3 is separately referred to; and the same letters and numbers, as marks of reference, apply to the like parts in all the figures.

A, A, may represent the windlass bits, as ordinarily used, on which the windlass is fitted, with the barrel between them, but this is not shown.

a, *a*, are bearings carrying the necks or journals of the windlass shaft or spindle *b*, which, in this construction is to be made of a uniform diameter, from end to end, instead of being reduced at the neck and ends, as is often the practice, in the common windlass.

c, is a cast metal boss, or hub, fitted and keyed on the shaft, having a square 1, and a round part 2, the part of which, next the bits, has a wrought metal band 3, fitted when hot, and shrunk on; and the outer ends of the shaft are reduced nearly into a square 4; the uses of these parts are shown hereafter.

B, is the windlass head, made with whelps *d*, as usual, and having in the inner end, a bush *e*, countersunk and peaned in, or keyed, or secured in any convenient manner, this is best seen in Fig. 3, in which the bush is shown as a square, the size of the square 1, on the shaft *b*. The outer end of the head is made with a square in the center, to fit the square 4, on the end of the shaft *b*. The larger end of the head B, is formed with ratchet teeth 5, made at about an angle of 45°, with the radial line, which take a stop pawl *i*, held by a pin 8, on a plate *k*, set on the bits A, with a backing flanch *l*, behind the pawl.

On the round part of the boss 2, between the head and the band 3, a metal annular disk *f*, forming a wide collar is placed, with one edge extended, and formed as a box *g*, overlying the ratchet teeth 5, with 7, a guide plate, on the opposite side of the ratchet, and carrying between the sides, the pawl 6, shown best by dotted lines, in Fig. 2. The outer portion of this box forms a base, on which a cylinder forming a socket, *h*, for the handspike, is cast or forged, solid with the other parts; when all these parts are in place the head B, is secured from sliding off the shaft, by a pin *g*, see Figs. 1, and 2, or by any other convenient device. When thus fitted the sockets *h*, for the handspikes when not in use will assume the position shown in Fig. 1, in which the socket, box, and pawl, will be generally out of the way of injury by accident; and when needed for use, are to be elevated as shown in Fig. 2, and a handspike, or brake, is to be placed in each socket, and the two alternately worked, as in the common pump brake; when, on the up motion, the pawls will pass over the ratchet teeth 5, and on the commencement of the downward motion, fall into and move the ratchet and head B, with the spindle and windlass barrel; or a

spring may be used, to throw the pawl into place; and the backing pawl *i*, takes the strain on the upward motion of the brake, and is sustained by the shoulder or backing flanch *l*; thus relieving the pin 8, from any strain, and making the pawl less liable to injury, by the operation of any weight on the windlass body or head.

In the ordinary mode of fitting windlasses with these parts, the annular disk *f*., is fitted to the size of the spindle *b*., and with the box *g*., guide plate 7., pawl 6., and socket *h*., are kept in place by the larger end of the windlass head B., this end of the head being permanently keyed to the spindle *b*., near the neck, or journal, and sometimes the outer end, only, is keyed on, so that the spindle *b*., has not any protection from participation in injuries to the head, that will twist, break, or render the spindle useless; the parts rust together, where in contact particularly around the key; so that when the head, only, is injured, the whole windlass has to be displaced, to remove the injured head, and put on a new one; but the most frequent cause of injury occurs, by strains, or blows, when in use, knocking the socket *h*., or both that and the box *g*., off the disk *f*., and in this case, the head B., is perfectly useless, until it has been taken off, and a new socket and disk put in place; To do this at sea, with the ordinary construction, is a difficulty nearly amounting to an impossibility; as the rusting of the parts in contact holds the head and spindle so strongly together, that more than one case has come into my workshop, in which it was absolutely needful to break an uninjured head, before the broken heaving socket and disk could be replaced by a new one.

In the mode of fitting, herein described and shown, the part next the journal of the spindle, is supported by the boss *c*., acting outside the bearing; and is so strengthened by the wrought band 3., that the boss *c*., cannot be injured, without breaking the band *c*., these parts are, therefore, permanent attachments to the spindle, independent of, though acting with the head, when this is in place; so that an injured head can be taken off, and a new one put on, without removing the windlass, at all; and the next consequence of this arrangement is, that if only the heaving socket *h*., and disk are broken, the head can be removed, and a new disk and socket put in, and the head replaced, and all be fit for use, without removing any of the other parts of the windlass; the effects of this change in the construction, are, first, that the heaving and torsion strain is so much thrown on the head and boss, that the spindle has less strain on it, than in any of the ordinary modes of fitting, particularly when, as before referred to, the head and spindle are keyed together at their outer ends only, or fitted only with a square and pin at the end; the second effect is, that by the mode of fitting the bush *e*., into the inner end of the head, a fracture, destroying the head, will generally detach the fragments from the bush *e*.; and in any case leave the boss and spindle uninjured; the third effect, consequent on the second, is that an injured head, or heaving socket and disk, or both, can be either or both replaced, by the crew of the ship shifting off the old, and putting on the new parts; thus both saving expense, and adding, materially, to the general security of the ship, and all on board her.

I am aware that bosses, having both square and round parts, have been used for other and different purposes, and in some cases, for purposes apparently similar; but I do not know of any instance, in which the application of such bosses admits the removal of either separately, or both of, the parts of a machine, when either, or both, are injured, so that either, or both, may be immediately replaced, by new parts; nor do I know of any instance, in which the application of such parts is at once combined with a saving of expense, and an additional security to life and property, as is the case, in the present instance; I therefore do not claim any of the parts herein described and shown, irrespective of the manner, in which I have applied them to attain these objects; but

I do claim as of my own invention, and desire to secure by Letters Patent of the United States, as new and useful in effect,

The application of the boss *c*., with the wrought metal band 2., and square 1., acting with the bush *e*., to connect the windlass head B, with the shaft *b*., and, at the same time, support the heaving socket and flanch, in such a manner, that either the head, or the heaving socket and flanch, or both, can be immediately replaced, when injured; the whole constructed, and operating, substantially as described and shown.

In witness whereof, I have hereunto set my hand, in the city of New York this twelfth day of May, one thousand eight hundred and forty seven.

CHARLES PERLEY.

Witnesses:

WM. SERRELL,

LEMUEL W. SERRELL.

[FIRST PRINTED 1913.]