Jacob Edson's improved Lever-power.

No. 42.080.

Patented March. 29. 1864.

Fig. 2.

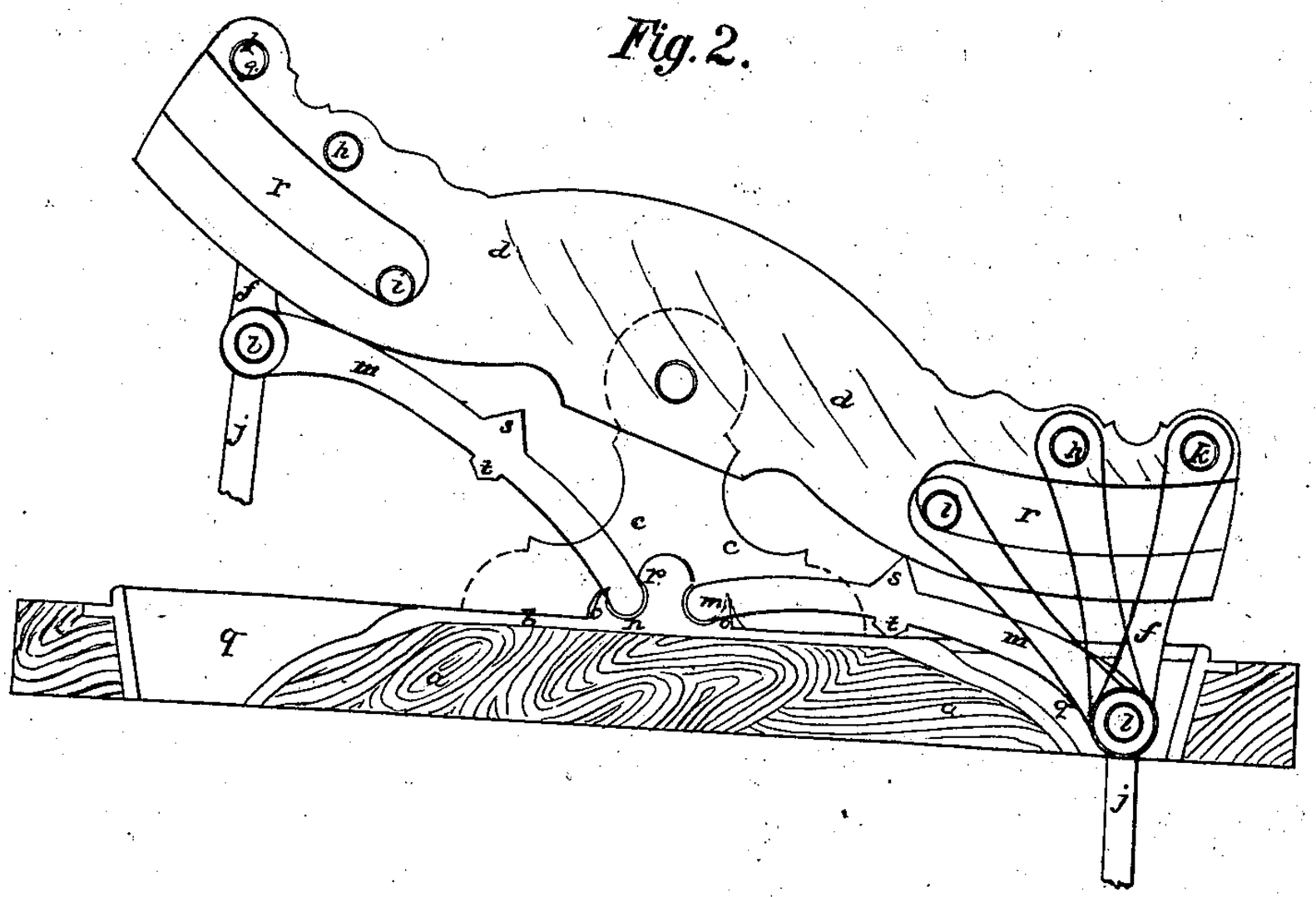
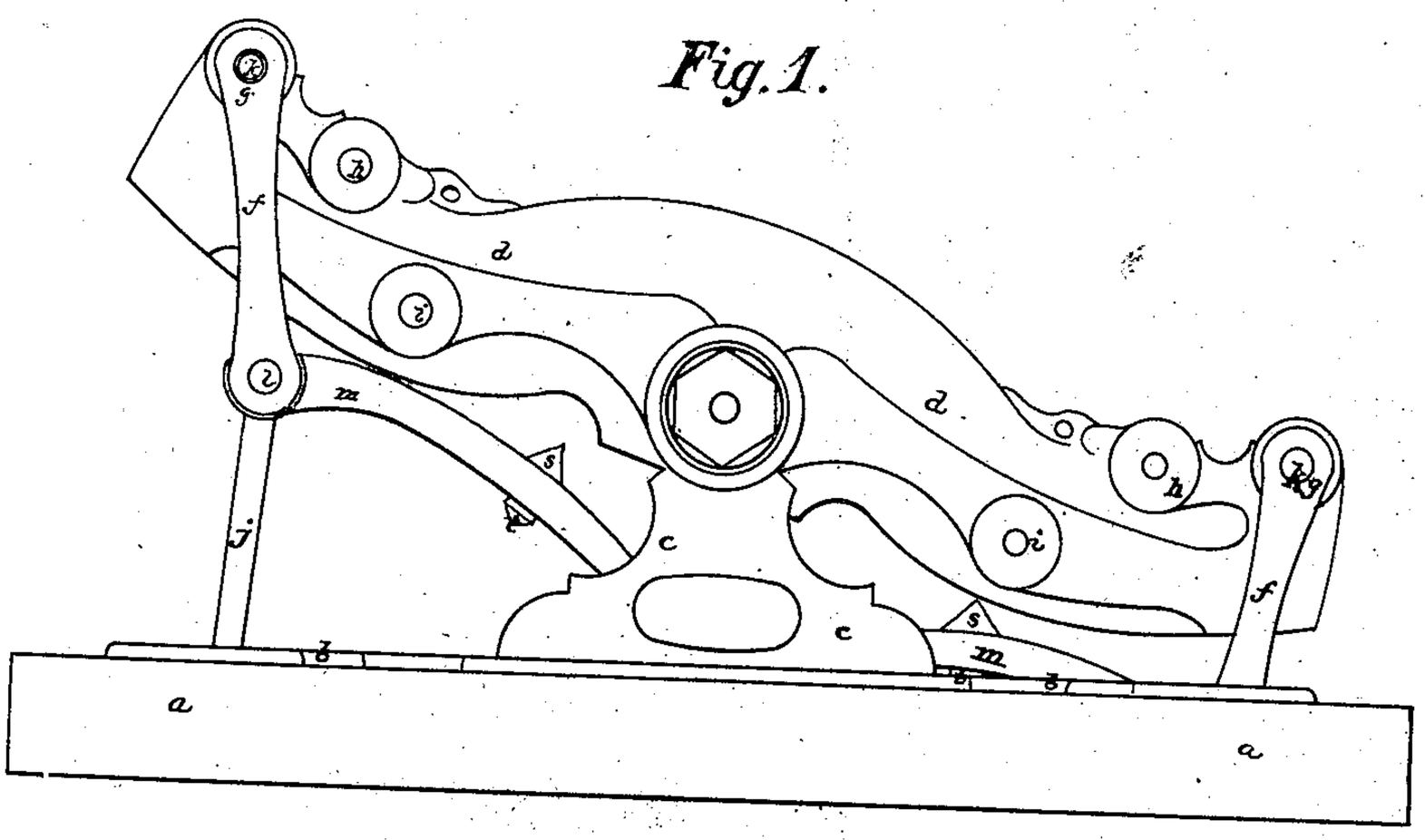


Fig. 1.



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UNITED STATES PATENT OFFICE.

JACOB EDSON, OF BOSTON, MASSACHUSETTS.

IMPROVED DEVICE FOR OPERATING WINDLASSES.

Specification forming part of Letters Patent No. **42,080,** dated March 29, 1864.

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 the Mode of Operating Windlasses, &c.; and I do hereby declare that the following description, taken in connection with the accompanying drawings, hereinafter described, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, whereby my invention may be distinguished from all others of a similar nature, together with such parts as I claim and desire to have secured to me by Letters Patent.

In the accompanying plate of drawings my improvements are represented, and Figure 1 is a side view; Fig. 2, a central longitudinal vertical section.

The present invention is applicable more particularly to the working of windlasses, &c., on shipboard. The objects contemplated and attained by its use are as follows:

First. The production of a lever-power apparatus which is susceptible of affording a variable degree of power, according to its adjustment--that is, so a greater or smaller number of men could work the same apparatus and accomplish the same results, according to the exigencies of the case. Thus, for instance, in a vessel where the number of the crew is limited, or in case few men can be spared for the hoisting of the anchor, my apparatus can be so set and adjusted as to be operated by a comparatively small number of men. On the other hand, a large number can be effectively employed on the same apparatus when desirable.

Second. The apparatus is so arranged that the different adjustments can be quickly and easily made, and the strain upon its parts, by a peculiar arrangement of devices, while the change is being effected, being removed.

Third. In the application of a lever-power to work a windlass on a vessel, it is extremely desirable not to cut away much of the upper deck for the passage of the windlass-rods through the same, as it is weakened thereby. My apparatus avoids this difficulty, it being so contrived that the windlass-rods necessarily travel in a vertical direction, or nearly so, through the upper deck, requiring but small apertures for their passages.

There are many other advantages in the construction and arrangement of my apparatus—such as strength, compactness, freedom of motion, &c.—which will be apparent in the sequel.

a a a in the drawings represent the deck of a vessel.

b b is a bed-plate, to which is secured, or on which may be formed, a standard or chair, *c c*.

d d is a swinging beam turning at its center in bearings formed in the upper part of the standard or chair *c c*.

f f are short arms, each of which may be applied at three differents points, *g h i*, of the swinging beam *d d* by means of a pin, *k k*, on which the arm *f* turns freely, as shown in Fig. 2. The lower end of each arm *f* is connected by a pivot-joint, *l*, to a lever-bar, *m*, which has a bearing upon which it swings freely at *n* in the lower part of the standard or chair *c c*. This bearing is formed in a peculiar manner by a projection, *o*, and a beveled cross-bar, *p*, the two forming an undercut journal for the bearing *n* of the lever-bar to play in. By constructing the bearing in this manner not only is more longitudinal play given to the lever-bar *m*, but at the same time, while it is kept from slipping out of its journal, it can easily be taken out of the same when it becomes necessary, for repairs or for other reasons, by simply unshipping the arm *f* from the swinging beam *d d*. The vertical rods that are to connect with the windlass below the apparatus are to be attached to the points *l l* and play up and down through proper apertures, *q q*, formed in the bed-plate *b b*.

r r are mortises formed in each end of the swinging beam *d d*, in which suitable bars may be inserted for affording the power.

From the foregoing description it will be seen that by the arrangement of the swinging beam, lever-bars, and arms *f f* the following results are attained: First, the degree of power to be obtained can be regulated at pleasure, according to which of the three points *g h i* in the swinging beam *d d* the arms *f f* are attached, *g* and *i* representing the two extremes of power, and *h* the medium; second, while the degree of power can thus be varied, as described, yet, by the arrangement and operation of the arms *f f* and the lever-bars *m m*, the windlass-rods attached to the points *l l* will always travel in a vertical or nearly ver-

tical direction, which obviates the necessity of cutting a large aperture in the deck, and lessens the danger of their breaking, both of which liabilities would occur if the windlass-rods were attached directly to the swinging beam *d d*, as in this case they would necessarily travel in a diagonal direction.

It is not only desirable to make the arms *f f* adjustable with regard to the swinging beam *d d*, but sudden emergencies often occur which render it necessary that they should be changed to one or the other of the points *g h i* very quickly, and with the certainty that they can be readily attached thereto. To insure this desideratum, the arms *f f* are so arranged with regard to the points *g h i* that when one end of the swinging beam *d d* is depressed to its lowest point the points *g h i* are in the circumference of a circle of which the pivot-joint *l* is the center and the arm *f* the radius, so that the pin *k* of rod-arm *f* must necessarily come in apposition with each of the points *g h i*, and thus can be easily attached to either one of them. Again, if the weight of the machinery, to which the vertical windlass-rods *j j* are attached at their lower ends, is allowed to bear upon the arms *f f*, it will be evident that it would be extremely difficult to secure the latter to either of the points *g h i* of the swinging beam, as the weight upon the arms *f f* would be so great as to prevent their being easily held up in the proper position to connect with the swinging beam. To obviate this difficulty, I construct the lever-bar *m m* in such a manner that it sustains the weight brought upon the windlass-rods *j j*, and also holds the swinging beam (when depressed to its fullest extent) in such a position that the proper relative distance between the points *g h i* and the center *l* of their circle is preserved, so that the said points shall come in apposition with the pin *k* of the arm *f*, as before explained. This is effected by forming on the lever-bars *m m* two projections, *s t*—one on the top thereof and the other on the bottom—the top one, *s*, forming a bearing for the swinging beam to rest upon and keep it in the proper position, and the lower one, *t*, resting upon the bed plate *b b* and sustaining the lever bar *m m*, and consequently relieving the weight from the arms *f f*, so that they can be freely swung to either of the points *g h i*.

It will be evident that any proper conformation of the lever-bar that will furnish an upper and lower bearing may be made in lieu of the projections *s* and *t*.

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

The combination and arrangement of the swinging beam, adjustable radial arms, and lever-bars, operating together substantially as described, and for the purposes specified.

JACOB EDSON.

Witnesses:

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