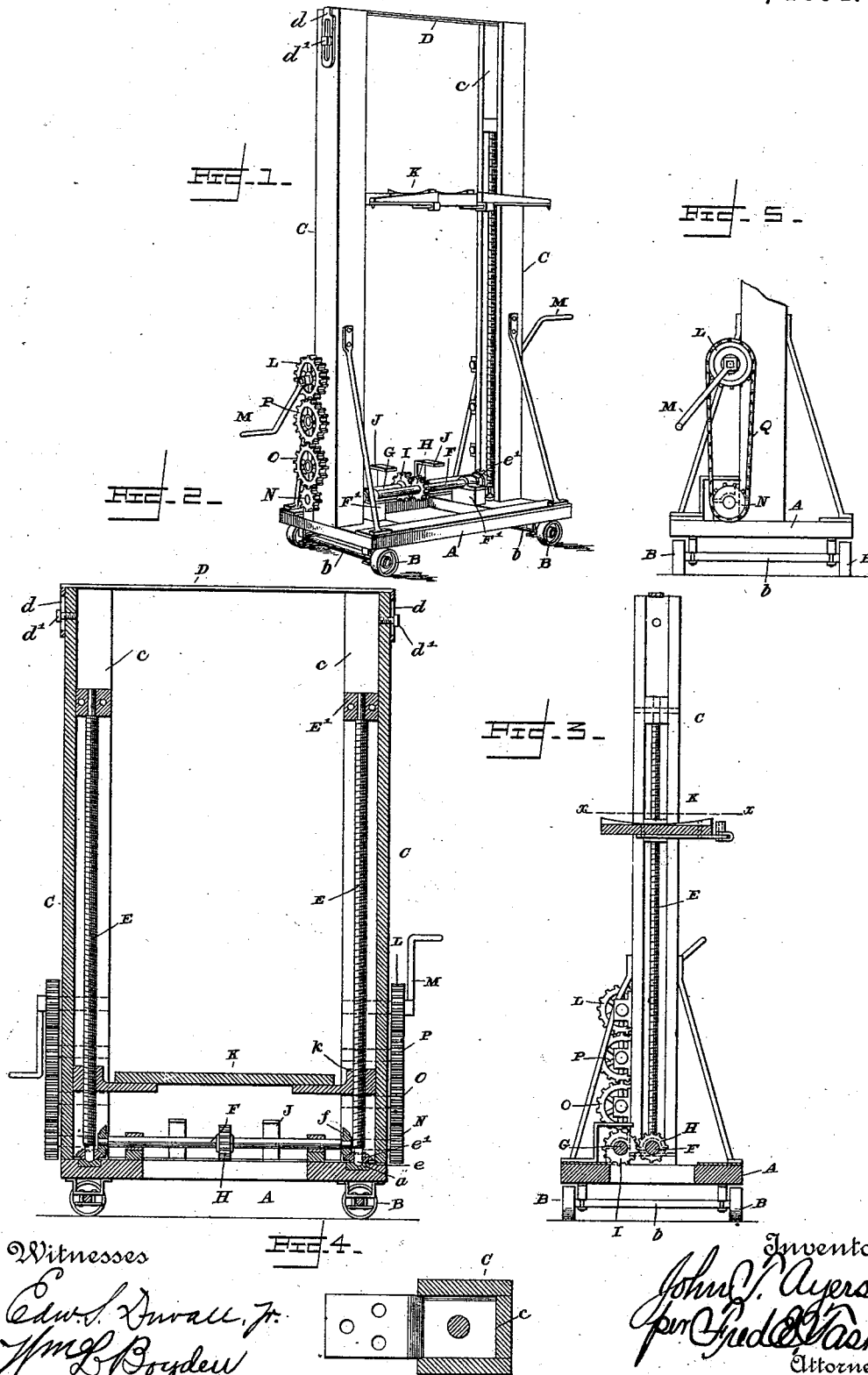


(No Model.)

J. T. AYERS.
PORTABLE SCREW ELEVATOR.

No. 514,299.

Patented Feb. 6, 1894.



UNITED STATES PATENT OFFICE.

JOHN T. AYERS, OF ELMIRA, NEW YORK.

PORTABLE SCREW-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 514,299, dated February 6, 1894.

Application filed May 29, 1893. Serial No. 475,906. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. AYERS, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Portable Screw-Elevators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in portable screw elevators.

The object is to provide a strong and efficient mechanism which can be easily moved about from one place to another and employed efficiently for the purpose of lifting heavy articles such as beer kegs or barrels, flour barrels, &c.

The invention is intended to be adapted for a great variety of uses.

It consists therefore essentially in the construction, arrangement and combination of parts substantially as will be hereinafter described and then more particularly pointed out in the following claim.

In the annexed drawings illustrating my invention: Figure 1 is a front perspective view of my improved portable screw elevator. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a transverse vertical section. Fig. 4 is a detailed horizontal cross section on the line *x x* of Fig. 3. Fig. 5 is a partial side elevation showing a modification in the arrangement of the parts of the actuating mechanism.

Similar letters of reference designate corresponding parts throughout all the different figures of the drawings.

The design of this invention is to provide an elevator having a strength and capacity equal to those which are ordinarily made as fixed structures in buildings, &c., but yet which may be easily moved about from place to place so as to be readily applied for use at any desired point, its several mechanical parts being supported upon a stout truck of any suitable size and construction. A designates the platform of this supporting truck. B denotes the wheels secured on the horizontal shafts *b b* which are suitably journaled beneath the platform A. The wheels B are preferably quite small in size. I do not desire to be

restricted to any particular construction however for this truck, reserving the liberty of making the platform A in any desired manner and also of employing any kind of wheels and arranging them in any preferred style, it being only desirable that the truck shall be so made that it can be easily rolled about from place to place.

On the platform A are supported two uprights C C of any desired height and size, being of course strong and rigid and a sufficient distance apart to allow the elevator platform K to be arranged between them in such a manner that it can easily be lifted and lowered. The uprights C C are sustained in their position by means preferably of iron braces as shown in the drawings. These posts or uprights C C are usually made rectangular and hollow so as to provide the inner grooves or longitudinal recesses *c c*. Within these vertical longitudinal recesses *c c* are located the operating screws E E, whose upper ends are journaled in the fixed blocks E' and whose lower ends *e e* are supported revolvably in the steps *a a* or bearing plates, which are placed in the platform A. Thus it will be seen that the lower ends of the operating screws E E are supported in such a manner as to bear the weight of the screws and yet to permit an easy rotation thereof in neatly arranged bearings. The upper ends of the uprights C C are connected together by means of a horizontal tie piece D, the ends of which are bent at right angles so that they can lie outside of the uprights C C in contact with the outer faces thereof, as shown in Figs. 1 and 2, said ends being slotted at *d d* and through these slots pass the adjustable bolts D' D' which are used for the purpose of securely fastening the tie rod to the uprights. It will be observed moreover therefore that this tie piece is adjustable vertically on account of the arrangement of slots and bolts so that its horizontal portion may be lifted a short distance above the extreme upper ends of the uprights when desired for the purpose of permitting the load of the elevator to be carried higher than would otherwise be possible if this tie piece were not thus made adjustable.

The operating screws E E are constructed in the ordinary manner with the spiral thread. Their lower ends *e e* which as we have seen

already are supported in the hardened plates *a a* are provided with small horizontal bevel pinions *e'* which are securely fastened thereto. These pinions *e'* mesh with vertical bevel pinions *f f* which are securely fixed on opposite ends of a horizontal shaft *F*, which is supported in bearings *F' F'* on the truck platform *A*. Parallel to the shaft *F* is another shaft *G* which is likewise supported in bearings on the platform *A*. The shaft *G* is provided near its middle point with a gear wheel *I* which engages another gear wheel *H* secured on the shaft *F* near its middle point. The shaft *G* carries at each end a pinion *N* located outside of the uprights *C C*. On the outer face of each of the uprights *C* is arranged a train of gears *L*, *P* and *O* which intermesh with each other and are supported on studs fixed in the uprights, all as is clearly shown in Figs. 1 and 2. The gears *L L* are provided with crank handles *M M* by means of which they are rotated. The rotation of gear *L* obviously imparts motion to the gears *P*, *O* and *N*, which in turn rotate the shaft *G* and consequently the shaft *F*, which is geared to the shaft *G* and this results in the rotation of the vertical screw shafts *E E*. The platform *K*, of the elevator, is provided with nuts through which the screws *E E* pass and consequently the rotation of the screws *E E* in one direction or the other, must result in the lifting or lowering of the elevator platform *K* after the usual manner of the operation of screw elevators. *k k* designate these nuts which belong to the platform *K* and it will be obvious that they may be constructed, arranged and applied, in any desirable or preferred manner.

Sometimes I find it desirable to omit the gears *O* and *P* which connect the gears *L* and *N*, and substitute in place of these gears *O* and *P*, a chain *Q*, as is shown in Fig. 5. When this is done, I make the gears *L* and *N* after the manner of sprocket wheels, and the chain *Q* by passing around these sprocket wheels, connects them and performs the same function as is performed in the construction shown in Fig. 1 by means of the intermediate gearing. The gears *L L* are situated at such a height that the crank handles *M M* which manipulate them, may be conveniently placed for manipulation by a person standing near

the elevator. I therefore reserve the liberty of communicating motion from the gears *L L* to the shafts *F* and *G* in any desired manner, either by intermediate gearing or by sprocket wheels and chains or by other suitable connections.

A portable elevator constructed in the manner which I have just described, will be found to be very strong and efficient and it can readily be moved from place to place so as to be used wherever desired. On the platform *A*, I attach the rectangular guards *J J* which are located alongside of the shafts *F* and *G* which serve to prevent the elevator platform from descending into contact with said shafts and their gearing.

Numerous changes in the exact details of the construction, arrangement and combination of the several parts may be made without departing from my invention. Metallic plates or incasements for several of the wooden sections of the apparatus may be employed and secured in place by bolts or in any other desired manner. I reserve the liberty therefore of making many of these minor changes and of constructing and applying the several parts in such a manner as to achieve the best results and make the apparatus the most practical and efficient in use.

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

The combination of the uprights *C C*, the vertical screw shafts *E E* having their lower ends *e e* supported in step bearings *a a*, and carrying bevel pinion *e'*, the horizontal shaft *F*, having at each end a pinion *f* engaging the adjacent pinion *e'* and having at its middle point a gear *H*, the parallel shaft *G* having a gear *I* which engages gear *H* and having at each end a pinion *N*, the gears *L L*, with their operating cranks *M M* and suitable connections between the gears *L L* and the pinions *N N*, together with the platform *K* having nuts which are engaged by the vertical screw shafts *E E*, all substantially as described.

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

JOHN T. AYERS.

Witnesses:

M. H. HURST,
CHARLES S. DENISON.