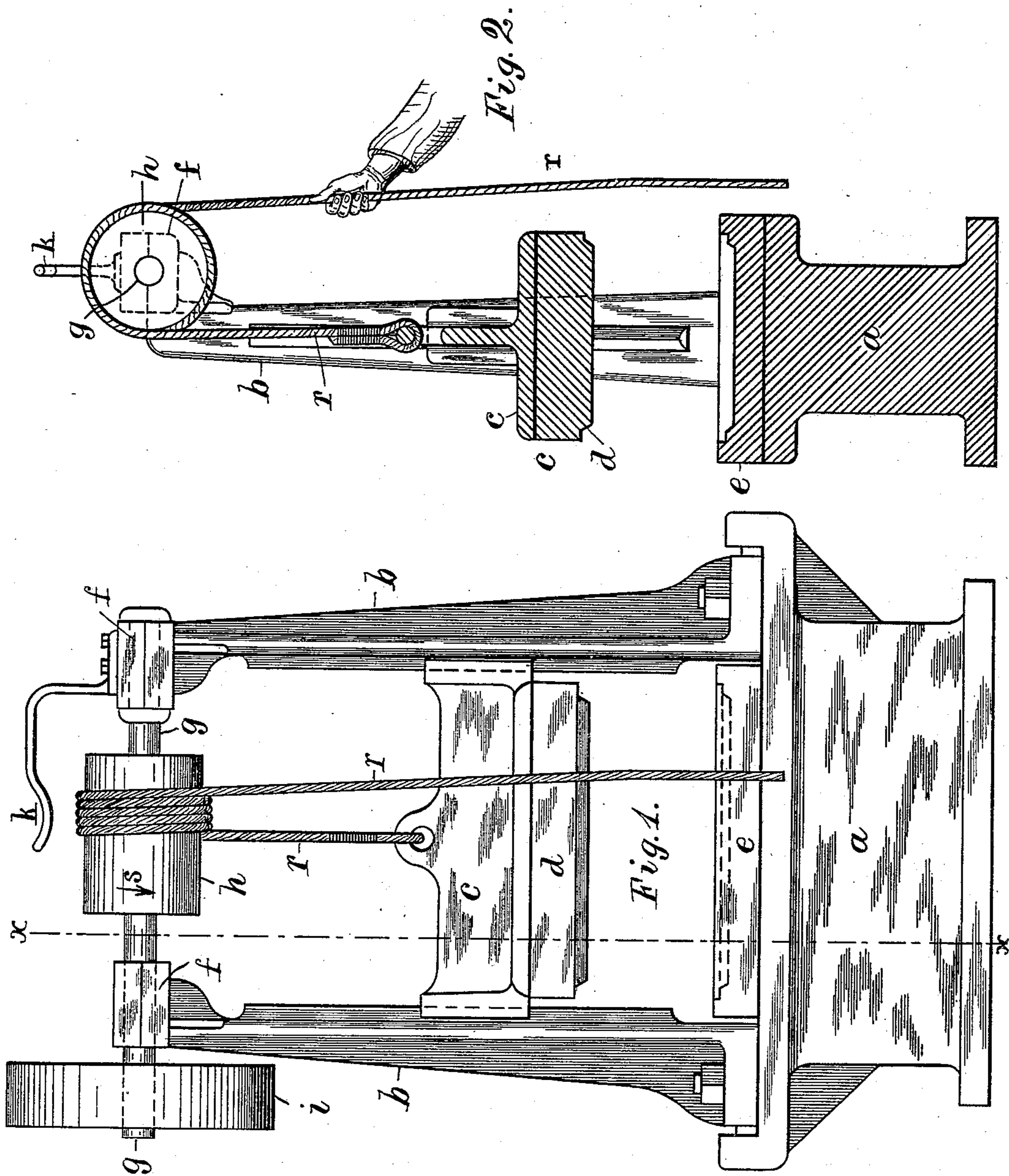


(No Model.)

F. W. THOMPSON.
DROP HAMMER.

No. 488,620.

Patented Dec. 27, 1892.



Attest:
L. Lee.
Edw. H. Kinsey

Inventor.
F. W. Thompson, per
Crane Miller, Atty.

UNITED STATES PATENT OFFICE.

FRED. W. THOMPSON, OF BROOKLYN, ASSIGNOR TO THE TWIST PIPE COMPANY, OF NEW YORK, N. Y.

DROP-HAMMER.

SPECIFICATION forming part of Letters Patent No. 488,620, dated December 27, 1892.

Application filed March 23, 1892. Serial No. 426,107. (No model.)

To all whom it may concern:

Be it known that I, FRED. W. THOMPSON, a citizen of the United States, residing at Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Lifters for Drop-Press Hammers, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to that class of drop presses in which the weight is lifted by the frictional contact of a rotating pulley with a flexible connection to the hammer. Heretofore, in such presses it has been common to connect one end of a flat leather belt with the hammer, and to extend the other end of the same over the top of the revolving pulley and downward to the hand of the operator; who could then lift the weight by pulling the belt into close contact with the pulley. The pulley is rotated continuously in a suitable direction to lift the hammer by its friction against the belt, and the weight of the hammer is raised partly by the friction of the pulley, and partly by the force applied to the free end of the belt by the operator. With a five inch belt thus used it has been common to raise hammers or "forces" of various weights up to four or five hundred pounds, and it has also been common in using larger weight as ten or fifteen hundred pounds, to use power lifters, which have been made of various constructions; but none of them adapted to deliver blows of varying force with such rapidity as the leather belt held in the operator's hand. I have discovered that all the advantages of the flexible belt lifter can be extended to heavy weights almost indefinitely, by substituting a rope for a flat belt and wrapping the same around the pulley one or more times to secure the required frictional grip. With this construction, I find that I can raise a weight of fifteen hundred pounds by wrapping a one inch rope four times around a ten or twelve inch pulley, and that a tension of only five pounds is required at the end of the rope when sufficiently wrapped on the pulley.

My invention is illustrated in the annexed drawings, in which

Figure 1 is a front elevation of a drop press

with a long cross head to sustain the "force" or hammer; and Fig. 2 is a vertical section of the same, where hatched, on line x, x , in Fig. 1.

a is the bed of the drop press, b the columns, c the cross head of the hammer, d the "force" attached thereto, and e the die upon the bed, which latter is shown of suitable character to stamp a tea-tray of greater length than width.

f are the bearings for the driving shaft g .

h is the lifter pulley, and i the belt wheel by which the same would be rotated continuously in the direction of the arrow s .

r is the rope, shown coiled five times around the pulley h , and its free end hung over the front side of the pulley within reach of the operator. The drop presses, for stamping such goods as trays, are used upon different occasions with dies greatly varying in size, and the "forces" employed therewith are commonly cast of varying sizes to suit such dies, and of fusible metal, attached to the cross head c in the process of casting. The forces used in such a press may therefore vary in weight from three hundred pounds up to a thousand or fifteen hundred pounds, and the friction required to lift such a force varies correspondingly. Where a flat belt is used as a hammer lifter its frictional surface cannot by any means be increased; but with the rope used in my invention the frictional surface can be increased in any required degree by wrapping the rope around the pulley, to lift the load with a hand tension upon the end of the rope. The increase of the friction, in proportion to the load, in a manner not possible with a flat belt makes the rope used in my invention perform a function different from that heretofore performed by any belt.

The operator, in using my invention, prepares the press with the desired dies, and after wrapping the rope around the pulley according to his judgment, endeavors to lift the weight by pulling upon the free end of the rope. If the weight cannot be lifted, the rope is again wrapped around the pulley, and is thus tested, until the pulley exerts the desired friction upon the rope; and the weight can be lifted with a slight tension applied to its free end, and then quickly dropped by releasing such tension. The rope is gradually

worn out by frictional contact with the pulley, but will last a long time, and when destroyed can be replaced at a much smaller cost than the leather belts heretofore used for a similar purpose in drop presses. A hook $\frac{1}{2}$ to support the rope, is shown attached to one of the columns, and may be used to prevent the pulley from wearing the rope out needlessly; by lifting the coils of the rope and supporting them upon the hook when the press is not in use. Such device is cheaper than any means that could be used to stop the rotations of the lifter pulley.

Owing to the great adaptability of the rope to lift different loads, the exertion required upon the part of the workman to lift the hammer may be reduced in a much greater degree than has been possible heretofore; where a belt is used, and the friction cannot be varied.

A handle to pull the rope is entirely immaterial, as the grasp of the hand upon the rope is ample to raise any required weight, when the wrapping of the rope is properly adjusted to the load; and the absence of a handle facilitates the wrapping of the rope around the pulley whenever it is necessary to change its tension.

In the drop presses where weights of four hundred pounds are lifted by a flat belt, a considerable degree of exertion is required on the part of the operator to lift the die, and he is therefore unable to repeat the blows as often as desired, or to graduate their force by lifting it a variable height, without great effort. Where a lighter die is used, it is often of great advantage for the operator to first lift the force a very short distance, and thus to start the impression with a very light blow, increasing the subsequent blows in force as the impression is deepened.

By the successive wrappings of the rope in my invention, the strain upon the operator's hand may be diminished so greatly that the

utmost nicety can be employed in raising the "force" and graduating the force of its blows, but where power lifters are used, this cannot be done with the same facility.

As power lifters have heretofore been generally used for raising heavy forces, it will be readily seen that my invention not only permits the adjustment of the blow with the utmost nicety when using heavy forces but saves the entire expense of a power lifter for the great number of presses in which heavy forces are used.

My invention thus, not only saves from one to three hundred dollars upon all new drop presses which would otherwise require power lifters, but it is applicable by making suitable changes, to all the present presses upon which power lifters are used, as it enables the operator to work with so much greater rapidity, and to adjust and vary the blows with so much greater nicety.

Having thus set forth the nature of my invention, what I claim herein is:

1. The combination, with a drop press, having a hammer movable vertically, of a drum with means for continuously revolving the same, and a rope attached at one end to the hammer and wound one or more times around the drum, as set forth.

2. The combination, with a drop press having a hammer movable vertically, of a drum with means for revolving the same, and a rope attached to the hammer and wound entirely around the drum with its free end extended sufficiently to wind around the drum one or more additional turns, as may be required to lift the hammer, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRED. W. THOMPSON.

Witnesses:

ANSON O. KITTEDGE,
GEO. H. PENDLETON.