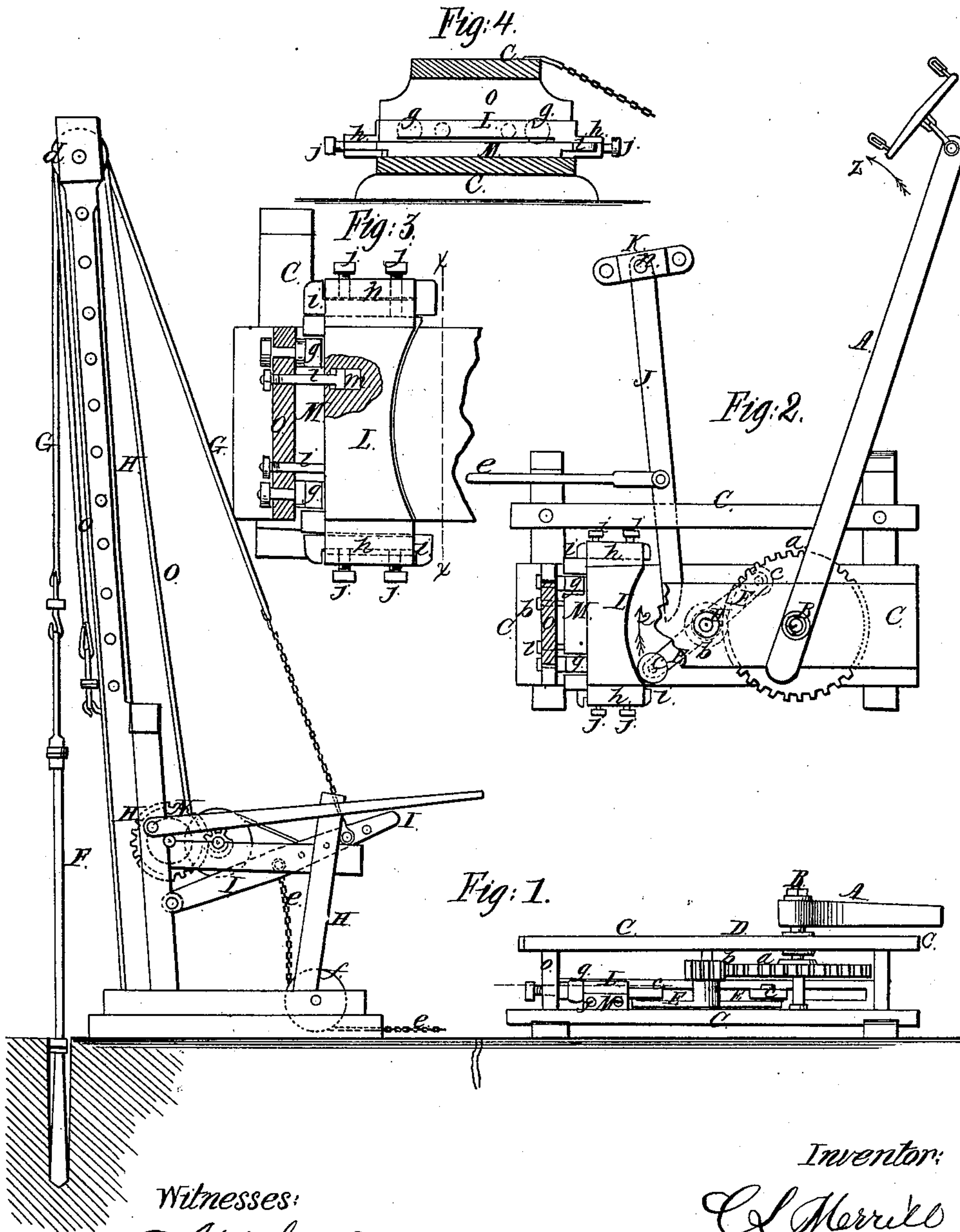


C. L. Merrill
Horse Power.

N^o 89,678.

Patented May 4, 1869.



Witnesses:
G. Hinchman
Brook Brooks

Inventor:
C. L. Merrill
 PER *Mum Th*

United States Patent Office.

C. L. MERRILL, OF WATERTOWN, NEW YORK.

Letters Patent No. 89,678, dated May 4, 1869.

IMPROVEMENT IN HORSE-POWER.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, C. L. MERRILL, of Watertown, Jefferson county, New York, have invented a new and improved Horse-Power; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of my improved horse-power.

Figure 2 is a detail plan or top view, partly in section, of the same.

Figure 3 is a detail horizontal section, on an enlarged scale, of the same.

Figure 4 is a detail vertical transverse section of the same, the plane of section being indicated by the line *x x*, fig. 3.

Similar letters of reference indicate corresponding parts.

This invention relates to a new machinery for regulating and equalizing horse-power, applied to well-boring or other apparatus, and has for its object to overcome the sudden changes in the friction occasioned in such machines, when alternately the strain is taken off and put on, by the alternate dropping and raising of the boring-tool.

The invention consists chiefly in the application of an adjustable friction-bed, which is brought in indirect contact with the operating-lever whenever the strain is removed from the latter, by the dropping of the tool.

The invention consists, also, in the application to the horse-power, of an independent windlass, by which the tool can be hauled up when desired.

A, in the drawing, represents the lever, to which the horse is to be attached.

This lever is secured to a vertical shaft, B, which has its bearings in a frame, C, that is firmly secured to the ground.

A toothed wheel, *a*, on the shaft B, meshes into a pinion, *b*, on another vertical shaft, D, as shown.

The shaft D carries two or more projecting arms E, of equal length, and each provided with a friction-roller, *c*, at its end.

The tool F, to be raised and lowered, is suspended from a rope or chain, G, which passes over a pulley, *d*, of a fixed frame, H, and which is secured to a lever, I, that is pivoted to the frame H.

Another chain or rope, *e*, fastened to the lever I, and passing over a pulley, *f*, underneath, is secured to a lever, J, which is, by a vertical pin, *n*, pivoted in a stationary box, K.

The end of the lever J is within reach of the arms E.

As the lever is, by the horse, revolved in the direction of the arrow 1, the shaft D is turned in the opposite direction, and the arms E therefore, in striking the lever J, push it in the direction of the arrow 2.

The lever, by such motion, pulls the rope *e*, and draws the lever I down, thereby also pulling the rope G, and elevating the tool F.

As soon, however, as the arm E, which acted on the lever J, has passed the same, the weight of the tool will pull the chain G down again, and will thereby pull the lever J into position for a new stroke of the next arm E.

Thus, as the shaft D continues to be revolved, will reciprocating motion be imparted to the tool, as many strokes, during each revolution of D, as there are arms E.

While the tool is held suspended, during the elevating-process, the full strain is on the horse, and this strain is suddenly removed when the tool falls.

To overcome the sudden changes thus produced, I have arranged a horizontal spring-plate, L, which is, by means of rubber or other springs, *g*, forced towards the shaft D, and which has a concave inner edge, nearly, or quite concentric with a circle described around D.

The roller *c*, of one arm E, comes in contact with the edge of the plate L, as soon as the other arm is released by the falling tool, and the friction of the spring *g* against the arm, is then sufficient to exert some resistance, which will make the change of weight or strain less perceptible.

As soon as one arm E comes in contact again with the lever J, the action of the spring-bed L ceases, as the length of its curved edge is just sufficient to work on the arm while the tool is not held suspended.

In order to prevent the sliding bed from moving unevenly, I have placed its downward-bent grooved edges *h h* over the ends of a fixed plate, M, and have arranged keys *i i* in the grooves, as in figs. 3 and 4, so that, by means of set-screws *j*, the friction, at the ends, may be regulated.

There are also pins *l l* fitted, with their enlarged heads *m*, into cylindrical or prismatic cavities of the plate L, said pins being secured in a fixed plate, *o*, as shown in fig. 3.

The plate L will thus, by the springs *g*, be always moved evenly and accurately, and will exert an even pressure on the arms E.

On the frame H is arranged a windlass, N, which can be worked by hand, and which can be used to withdraw the pumping-rod gradually from the well.

In that case, the rope G is disengaged from the tool, and the rope *o* of the windlass attached to the same.

The windlass is provided with ratchet and pawl, to prevent its unwinding.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of the sliding spring-bed L with the rotating arms E, for the purpose of produc-

ing on the machine a strain, when there is not any, substantially as herein shown and described.

2. The combination of the arms E E, on the rotating shaft D, said arms having the friction-rollers c, with the lever J, chain e, lever I, and chain G, all arranged and operating substantially as herein shown and described.

3. The plate L, provided with the grooved edges h, when fitted over the ends of the fixed bed M, and over the adjustable keys i i, substantially as herein shown and described.

4. The fixed guide-pins l, working, with their enlarged heads m, in the plate L, substantially as described, in combination with the springs g, to operate as specified.

5. The windlass N, having the rope O, when arranged and operating substantially as specified.

O. L. MERRILL.

Witnesses:

FRANK BLOCKLEY,
ALEX. F. ROBERTS.