A. Kloman,

Converting Motion.

No. 105,951. Patented Aug. 2. 1870.

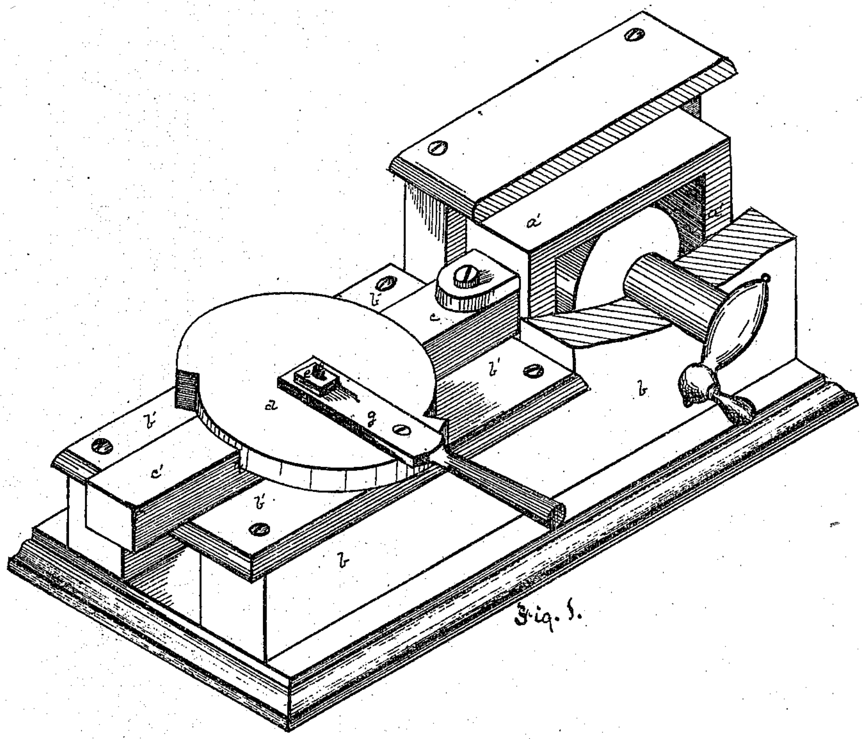

Fig. 1.

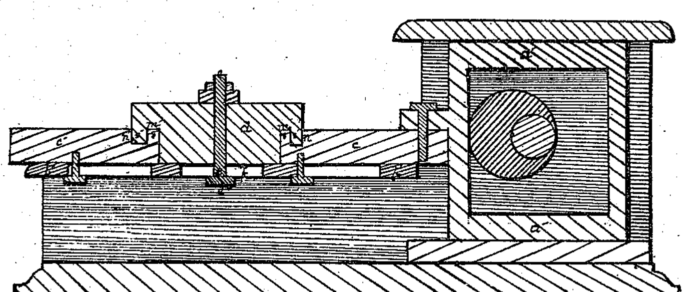

Fig. 2.

Witnesses:
R. C. Threnshall
Thos. Moore

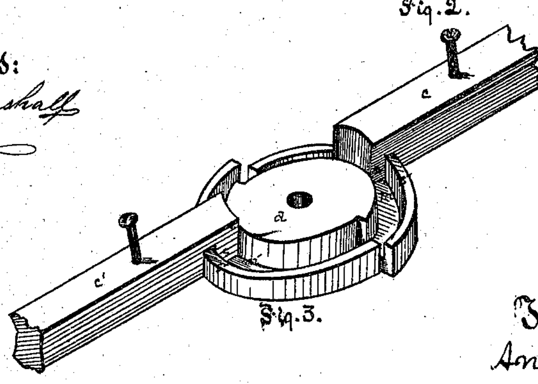

Fig. 3.

Inventor:
Andrew Kloman,
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United States Patent Office.

ANDREW KLOMAN, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 105,951, *dated August* 2, 1870.

IMPROVEMENT IN MECHANICAL MOTION.

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, ANDREW KLOMAN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Mechanical Motion; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a perspective view, partly in section, of my improvement in devices for varying at pleasure the length of a plunger or ram, or other reciprocating mechanical device.

Figure 2 is a longitudinal vertical section thereof, and

Figure 3 shows in plan view the under side of the plunger or ram, and the grooved double eccentric adjusting-block.

Like letters of reference indicate like parts in each.

In some mechanical movements, such as in bending and straightening bars of iron, upsetting the ends of iron rods and bars, it is sometimes desirable to vary the length of the ram, plunger, or other part of the machine, having a reciprocating motion, in consequence of the varying length or thickness of the material to be operated on, or from other causes.

My invention has this for its object, and the nature of it consists in combining with a divided plunger, or other reciprocating device, a double eccentric grooved shifting block, with suitable connections, so that the shifting of the latter will lengthen or shorten the former.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and mode of operation.

The frame-work *b* is of any desired or convenient construction.

By a cam or eccentric working in a yoke or box, *a'*, or by other equivalent device for such uses, a reciprocating motion is imparted to the plunger *c c*, which plunger, in this description, may represent any mechanical device which is designed to operate with a reciprocating or forward-and-back motion.

This plunger I make in two parts, the one, *c*, being attached to the cam-yoke *a'*, and the other, *c'*, being the means through which power or motion, or both, is conveyed directly or through other devices to the work to be done.

The adjacent ends are grooved, as at *n n'*, the grooves having a slight curvature corresponding to that of the grooves or flanges of the shifting block *d*.

This block *d* has in one place, at a short distance from its center, and on opposite sides, two eccentric grooves, *m m'*, so arranged with reference to each other that the points of greatest and least eccentricity shall be directly opposite each other.

The block *d* is then so connected with the plunger *c c'* that the flanges *s s'* shall enter the grooves *m m'*, *n n'* of the other.

It is there held in place by a bolt and nut *e*, the bolt having a square shank, *e*, which plays in a slot, *f*, in the bearing-plate *b'* of the frame *b*, the slot being of a length at least equal to the length of stroke of the ram.

The head *e''* of the bolt comes against the lower face of the plate *b'*.

A handle, *g*, or other suitable device, is attached to the block *d*, for convenience in turning it, and so varying the length of the ram *c c'*; and by length, in this connection, I mean the distance from its operative end or point to the point of its connection with the cam-yoke *a'* or other operative device.

The block *d* turns freely on its bolt *e*.

It will now be observed that, by turning the block so that the grooves and flanges of the plungers *c c'* shall occupy the flanges and grooves of the block *d* at their points of least eccentricity, the adjacent ends of the divided ram *c c'* will be brought nearer together, and the "length of the ram" correspondingly shortened, and *vice versa*.

Hence, in order to change the relative position of the operative end of the divided ram, it is only necessary to shift the block either way, according as it may be desired to make such operative point at a greater distance from or nearer to the point of connection with the cam-yoke, the object, however, being, in most cases, to change the operative end or point of the plunger or ram with reference to the material to be operated on, or the function to be performed.

The same object can be secured by the use of a single eccentric groove instead of two such grooves as described, the other being made with a uniform radius.

Also, the groove or grooves, instead of being made eccentric in a rotating block, as described, may be made in a sliding box, straight and converging toward either end, and, in such case, the grooves in the adjacent ends of the divided plunger *c c'* should be made straight and with a corresponding inclination.

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

1. The mode of increasing or lessening the operative length of a divided reciprocating mechanical device, by means of grooves eccentrically arranged

in a rotating block or converging in a sliding block, such grooves engaging correspondingly curved or inclined grooves in the adjacent ends of the divided reciprocating device, substantially as described.

2. A rotating block, *d*, having a pair of grooves, one at least of which is eccentric, in combination with the divided plunger *c c'*, substantially as described.

3. The subject-matter of the last preceding claim, in combination with a headed square-shanked bolt, operating in a slot, *f*, substantially as described.

In testimony whereof, I, the said ANDREW KLOMAN, have hereunto set my hand.

ANDREW KLOMAN.

Witnesses:

WM. B. NEEPER,

R. C. WRENSHALL.