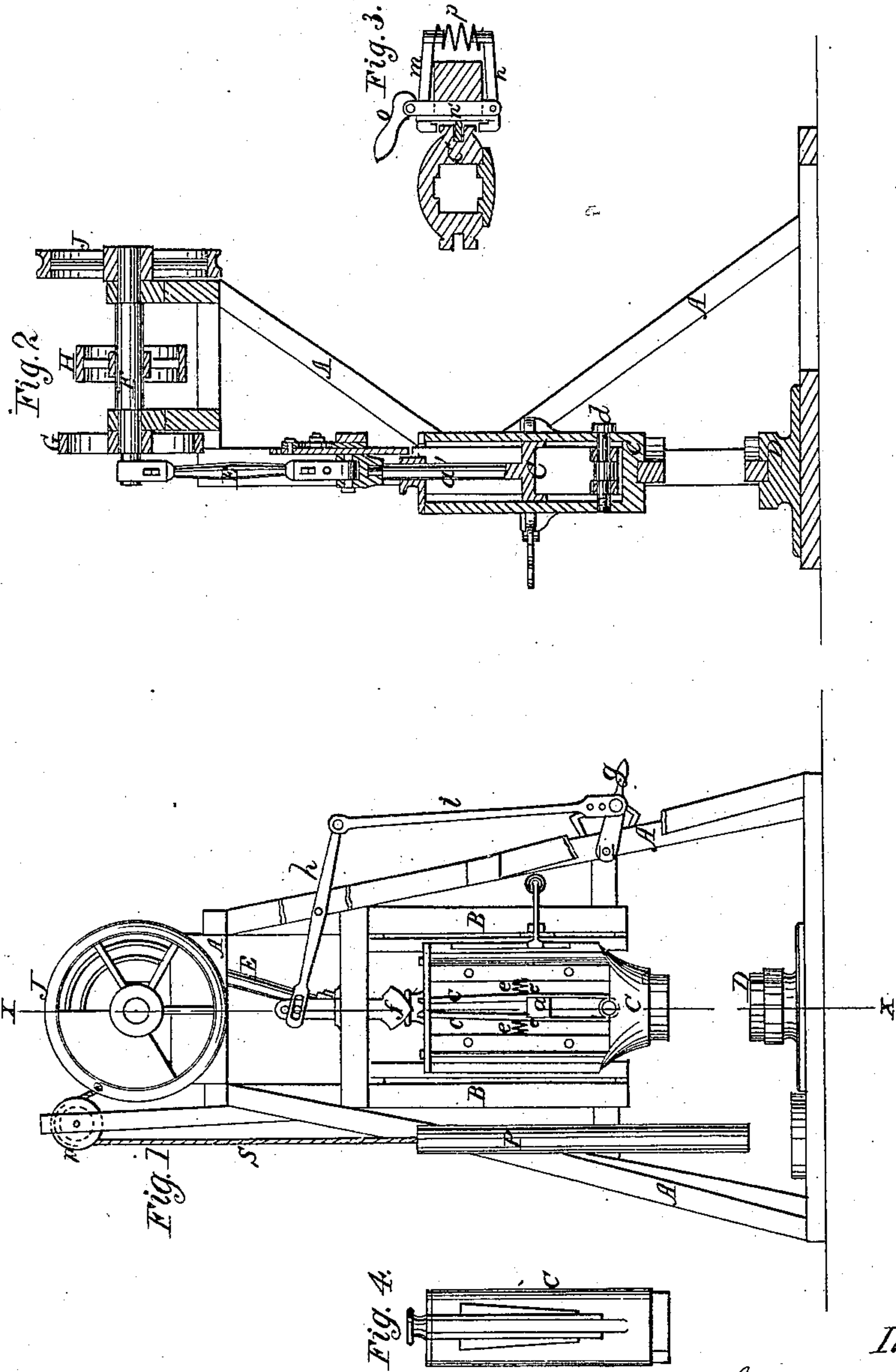


J. Tandler.

Trip Hammer.

N^o 68,295.

Patented Aug. 27, 1867.



Witnesses:
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JOSEPH TANDLER, OF GRAND RAPIDS, MICHIGAN.

Letters Patent No. 68,295, dated August 27, 1867.

IMPROVED TRIP-HAMMER.

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, JOSEPH TANDLER, of Grand Rapids, in the county of Kent, and State of Michigan, have invented a new and useful Improvement in Trip-Hammers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to the manner in which a trip-hammer is constructed, regulated, and controlled; and the invention consists in the construction and arrangement of parts whereby I am enabled to control the movement of the hammer. It also consists in a device connected therewith for upsetting bars or pieces of iron, as will be hereinafter described.

Figure 1 represents a back side sectional elevation of the machine, showing the detaching arrangement and the other parts connected with it.

Figure 2 is a vertical section of the same through the line *x x* of fig. 1.

Figure 3 is a detached view of the gripe arrangement.

Figure 4 is a detailed view of the edge of the hammer.

Similar letters of reference indicate corresponding parts.

This trip-hammer is designed to take the place of the expensive steam-hammer for most purposes for which power-hammers are now employed.

A represents the frame, to which the apparatus is attached. This frame is made of either wood or iron, and of suitable strength and form. B B are vertical timbers, forming part of the frame, to which the ways are attached which guide the hammer. C is the hammer. D is the anvil. E is a pitman, which connects the central rod of the hammer with the shaft F. The shaft F is supported on the top of the frame in suitable boxes, and is revolved by any power which may be used for the purpose, as steam or water. G is a crank-wheel on the shaft F, and H is the driving-pulley. J is a wheel which is used in the upsetting device. The detaching arrangement is seen in fig. 1. The hammer is cast hollow, and the central rod *a'*, the lower end of which is seen at *a*, passes down into the hammer, as seen, with a collar on the end, which forms square shoulders. *c c* form the detaching clamp, the lower ends of which form eyes, which take hold of a bolt which passes through the hammer, marked *d*, and seen distinctly in fig. 2. The connection with the bolt *d* is loose, so that the clamp-pieces *c c* are free to move. *e e* are two small spiral springs, (other springs may be used,) placed within the hammer, as seen, which bear against the clamp-pieces *c c* with a constant pressure. *c' c'* are shoulders on the insides of *c c*, which catch over the collar *a*, by which the hammer is raised. *f* is the spreader, which is moved up or down, and adjusted to any desired position by the small hand-lever *g* and the lever *h*, which levers are connected by the rod *i*. As seen in the drawing, the hammer is raised nearly to the point for being detached.

It will be seen that the hammer is now suspended on the collar *a*, which collar is on the end of the lifting-rod *a'*, seen in fig. 2. When the hammer is raised a little higher, the pieces *c c* will engage with the spreader *f*, and thereby be forced apart, which throws the shoulders of *c c* from the collar *a*, thus detaching the hammer, which drops upon the anvil. The force of the blow depends upon the distance which the hammer drops, when it is allowed to drop free, and this distance is determined by the position of the adjustable spreader *f*, as before mentioned. For the purpose of breaking the force of the blow of the hammer there is a gripping device attached to the frame, seen plainly in detached view, fig. 3. *C'* is a cross-section of the hammer, and *m n* are jaws, which are pivoted to a plate, *n'*, which is attached to the frame, the outer ends of which are connected by a spiral spring, *p*, as seen in the drawing. *o* is an eccentric lever, by which the jaws are made to grip the hammer. The edge of the hammer with which the jaws engage is tapering in form, or the hammer at this edge may be described as having wedge-shaped pieces upon it, with the points downward, with which the jaws engage, and which are seen in detailed view, fig. 4. When it is desired to soften the blow the hammer is gripped more or less firmly between the jaws by the eccentric lever *o*, when the wedge, as seen on the hammer, will pass down between the jaws, forcing them apart against the power of the spring *p*. This action makes levers of the jaws *m n*, the spring having the long end, and the fulcrum being on their pivots, which pass through the plate *n'*. It will thus be seen that the blow can be regulated to any desired weight, and consequently the hammer is adapted to light as well as to heavy work. The frequency of the blows would of course depend upon speed with which the shaft F was revolved.

In forging shafting and many other articles it is frequently necessary to upset them in some part of their length, and the revolution of the shaft F affords proper facilities therefor. This arrangement for upsetting a bar of metal is seen on the left hand of fig. 1, where a bar, P, is suspended from the wheel J over the friction-pulley *r*. The periphery of the wheel J is grooved or hollowed out on its centre for nearly its whole circumference, but the groove runs out, or nearly so, on one side, so that its centre is on the edge of the wheel; consequently a chain or a rope, *s*, when attached to the wheel and centre of the groove, as represented, and the wheel revolved, would slip off or out of the groove every revolution, but this would not take place until the rope had partly surrounded the wheel, and thereby raised the bar of iron a corresponding distance from an anvil or other solid plate placed beneath it. Of course when the rope or chain slipped off the wheel or out of the groove the bar would drop, and if it were heated in any part it would be upset in that part. After slipping off the pulley, the rope or chain being attached to the centre of the groove, would be again carried a part of a revolution, and again slip off, returning each time to its starting point, so that the bar would drop at every revolution of the wheel. This upsetting is usually done by hand with sledges, but in heavy forging it is a very tedious operation. By my method, as combined with my hammer, it becomes comparatively easy.

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

1. The combination of the hammer C, with its several parts, with the adjustable spreader *f*, substantially as described for the purpose specified.
2. The adjustable spreader *f*, arranged and connected as described.
3. The gripping arrangement, substantially as shown in fig. 3, combined with the hammer, as and for the purposes set forth.
4. The upsetting wheel J and the pulley *r*, connected to the frame A, and operated in the manner described.

JOSEPH TANDLER.

Witnesses:

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