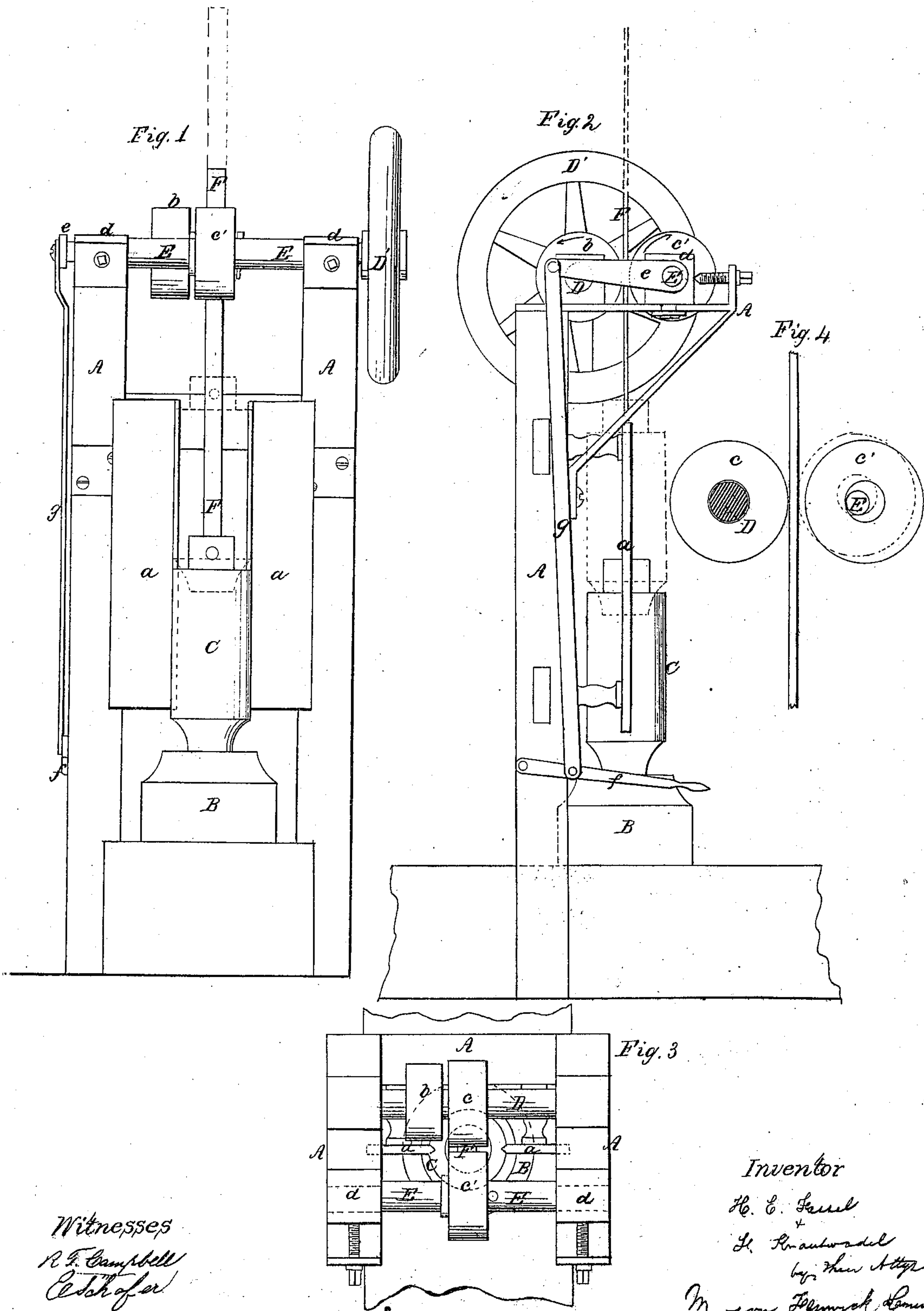


Fessel & Krautwadel, Trip Hammer,

No 46,229,

Patented Feb. 7, 1865.



Witnesses
R. F. Campbell
C. Schaffer

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UNITED STATES PATENT OFFICE.

H. E. FESSEL AND F. KRAUTWADEL, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN TRIP-HAMMERS.

Specification forming part of Letters Patent No. 46,229, dated February 7, 1865.

To all whom it may concern :

Be it known that we, H. E. FESSEL and F. KRAUTWADEL, of Chicago, Cook county, State of Illinois, have invented a new and Improved Trip-Hammer; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of our trip-hammer. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is a top view. Fig. 4 is an enlarged view of the lifting friction-wheels and hammer-strip.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to employ friction-wheels for the purpose of elevating trip-hammers, said wheels being so applied to a strip which is secured to the head of the hammer that the latter can be tripped at any desired elevation during its upward stroke by a very simple contrivance applied to the shaft of one of the wheels, as will be hereinafter described.

To enable others skilled in the art to make and use our invention, we will describe its construction and operation.

In the accompanying drawings, A represents a strong frame-work, which is constructed and braced in any suitable manner which will adapt it for sustaining the hammer and the contrivances for lifting and tripping it. At the base of this frame A is a firm foundation for supporting the anvil B, which is of sufficient size to resist by its inertia the whole blow from the hammer in its fall, and so lose none of its impact, even should the foundation be yielding. The hammer C, which receives a vertical reciprocating movement directly over the anvil B, works in side guides, *a a*, which are set off from the upright standards of frame A in order to afford ample room for the workmen about the anvil. These vertical guides *a a* are sustained by brackets or otherwise, and are partially let into grooves in the sides of the hammer, as shown in Figs. 1 and 3.

Directly over the hammer C, and supported on the top of frame A, are two horizontal shafts, D and E, both of which carry rollers. The shaft D is the driving-shaft, and may receive its rotary motion from any suitable prime mover through the medium of a belt passing around the pulley *b*. This shaft carries a fric-

tion-wheel, *c*, and also a fly-wheel, D', which latter is intended for equalizing the motion of this shaft in the operation of lifting and suddenly releasing the hammer. The shaft E has its journals a little out of line with its axis, and hence, when this shaft is rocked, a slight eccentric movement is produced, the object of which is to cause a friction-wheel, *c'*, to approach or recede from the friction-wheel *c*, as indicated in Fig. 4. The friction-wheel *c'* is loose on its eccentric shaft E and turns freely around it during the rising or falling motion of the hammer.

The hammer C has a narrow strip, F, secured to its head and projecting up vertically between the two friction-wheels, *c c'*. The width and thickness of this strip will depend upon the material of which it is made and the weight of the hammer to be lifted by it.

The journals of the eccentric shaft E have their bearings in boxes *a a*, which are so applied to the bracket-support of the frame A that they can be adjusted and set nearer to or farther from the stationary boxes of the shaft D. This adjustment admits of the friction-wheel *c'* being set nearer to the friction-wheel *c* should the surfaces of these wheels become very much worn out, or should it be desirable to employ smaller rollers.

On one end of the shaft E an arm, *e*, is keyed, which is connected to a hand-lever, *f*, by means of a rod, *g*. The hand-lever *f* is pivoted to the frame A in a convenient location for the workman standing at the anvil B. By means of this arrangement a person can bring the friction-wheel *c'* to act upon the strip F and grip this strip firmly between its periphery and that of the friction-wheel *c*, as shown in Figs. 2 and 3 and indicated in red lines in Fig. 4. By lifting the outer end of hand-lever *f* the wheel *c'* will be thrust back and release the strip F.

To operate the machine, the shaft D is rotated in the direction of the arrows, Fig. 2, and the loose wheel *c'* moved up so as to force the strip F tightly against the periphery of wheel *c*. The friction of the two wheels *c c'* will cause the wheel *c* to elevate the hammer. During the upward stroke of the hammer the wheel *c'* turns on its shaft in an opposite direction to the motion of the wheel *c*, and at any moment during the upstroke of the hammer the operator can trip it by lifting the

hand-lever *f*, and thus thrusting back the friction-wheel *c'*, as indicated in Fig. 4 in black.

In practice, the surfaces of the two wheels *c c'* may be covered with india-rubber or some other suitable substance which will create sufficient friction to enable them to lift the hammer by pressing upon each side of the strip *F*. These wheels may be made of some suitable substance, confined between two circular disks or flanges, and turned very true.

We are aware of the patents granted to Goulding and Cheney, September 16, 1862, B. Hotchkiss, February 17, 1863, and S. Remington, December 1, 1863, for trip-hammers, and we therefore do not claim anything shown

in our patent which is shown in the said patents; but

What we claim as our invention, and desire to secure by Letters Patent, is—

The combination and arrangement of the devices *e f g*, constituting both a tripping and adjusting contrivance, with the friction-rollers *c c'*, crank-shaft *E*, and hammer *F C*, in the manner and for the purpose described.

H. E. FESSEL.
FERD. KRAUTWADEL.

Witnesses:

W. H. H. CASE,
ELARY SMITH.