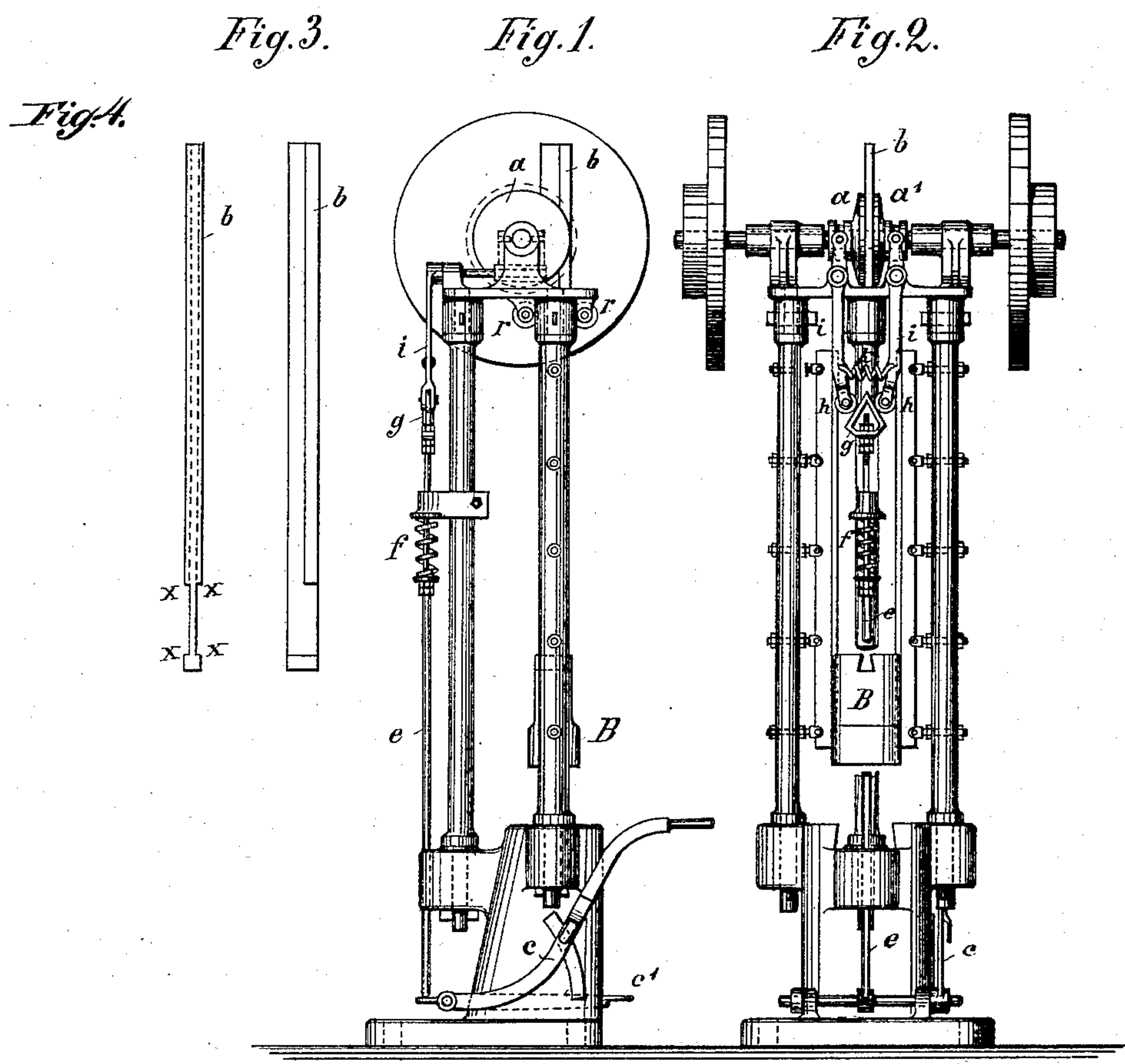


(No Model.)

W. HASSEL.
DROP HAMMER.

No. 327,082.

Patented Sept. 29, 1885.



Witnesses:

J. J. McCarthy.
J. J. Jagers.

Inventor:

W. Hassel by
Foster & Freeman
attys.

UNITED STATES PATENT OFFICE.

WILHELM HASSEL, OF HAGEN, PRUSSIA, GERMANY.

DROP-HAMMER.

SPECIFICATION forming part of Letters Patent No. 327,082, dated September 29, 1885.

Application filed June 30, 1885. (No model.) Patented in Germany August 12, 1884, No 31,223.

To all whom it may concern:

Be it known that I, WILHELM HASSEL, a subject of the King of Prussia, residing at Hagen, Westphalia, Prussia, have invented
5 new and useful Improvements in Friction-Hammers, of which the following is a specification.

This invention relates to an improved construction of friction-hammer, which I will proceed to describe with reference to the accompanying drawings, in which—

Figure 1 shows a side view, and Fig. 2 a front view, of the machine; Figs. 3 and 4, a front and side view of the stem *b*.

15 The wooden hammer-stem *b*, carrying at its lower end the wrought-iron hammer-block *B*, is nipped between the plane surfaces of two friction-disks, *a a'*, which are either fixed upon two separate shafts capable of shifting longitudinally or they are arranged to revolve with but to slide longitudinally upon a single shaft that has no longitudinal motion. In either case the shaft or shafts carrying the friction-disks is or are driven by
20 means of belt-pulleys, while the friction-disks are moved together and apart by means of steering-gear for effecting the raising and lowering of the stem and hammer.

The steering-gear consists of the levers *i i*,
30 whose fork-shaped ends embrace collars on the friction-disks. Between the lower ends, *h h*, of the said levers, which may be provided with rollers, is situated a wedge-shaped piece, *g*, so that by moving this upward by means of the rod *e* the levers *i i* have their upper
35 ends moved toward each other, whereby they are made to force the friction-disks *a a'* against the hammer-stem *b*.

The wedge *g* is adjustable upon the rod *e*
40 by means of an adjusting screw and nuts, as shown. The rod *e* is actuated by means either of the hand-lever *c* or the treadle *c'* for raising the wedge *g* and bringing the disks *a a'* into action, the separating of these again being effected automatically by the springs *k* and *f*.
45

The lever *c* may be provided with an adjustable balance-weight, so arranged that the lever is thereby caused to raise the wedge *g* sufficiently to actuate the hammer.

50 In order to prevent the hammer from being raised beyond a certain height, the hammer-stem is reduced in thickness at *xx*, as shown in the front and side view at Figs. 3 and 4.

The highest position of the hammer-stem

will be determined by the extent of the frictional surfaces of the disks acting upon the stem. As the part *xx* rises between the disks the surfaces in contact will gradually become less and less, until eventually an equilibrium will be established—that is to say, the hammer will remain suspended in a position in which the frictional contact between the disks and stem will just balance the weight of the hammer.

The rollers *r* serve to guide the stem *b*. It
65 will be seen from Fig. 3 that the latter is made thinner at the inner side. The object of this is to limit the frictional contact between the stem and disks to the outer circumference of the latter, whereby a more rapid motion of the hammer will be obtained than would be the case if the contact extended over the whole width of the stem.

The framing of the hammer may either be formed of wrought-iron columns, as shown,
75 or it may be made of a single casting of cast-iron.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is—

1. In a friction-hammer, the combination, with a hammer-stem, of the adjustable friction-disks for operating the same, having parallel faces, with the stem of the hammer extending between said parallel faces, substantially as described.

2. The combination, with the adjustable friction-disks, of a hammer-stem reduced in thickness toward the lower end for regulating the height of the stroke, and having the inner side of decreased thickness in order to limit the frictional contact to the outer circumference of the disks, substantially as described.

3. The combination, with the hammer-rod and friction-disks, of steering-gear consisting of the levers *i*, spring *k*, and rod *e*, carrying the wedge *g*, and controlled by the spring *f*, and hand-lever or treadle, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILHELM HASSEL.

Witnesses:

T. HENKES,
B. ROE.