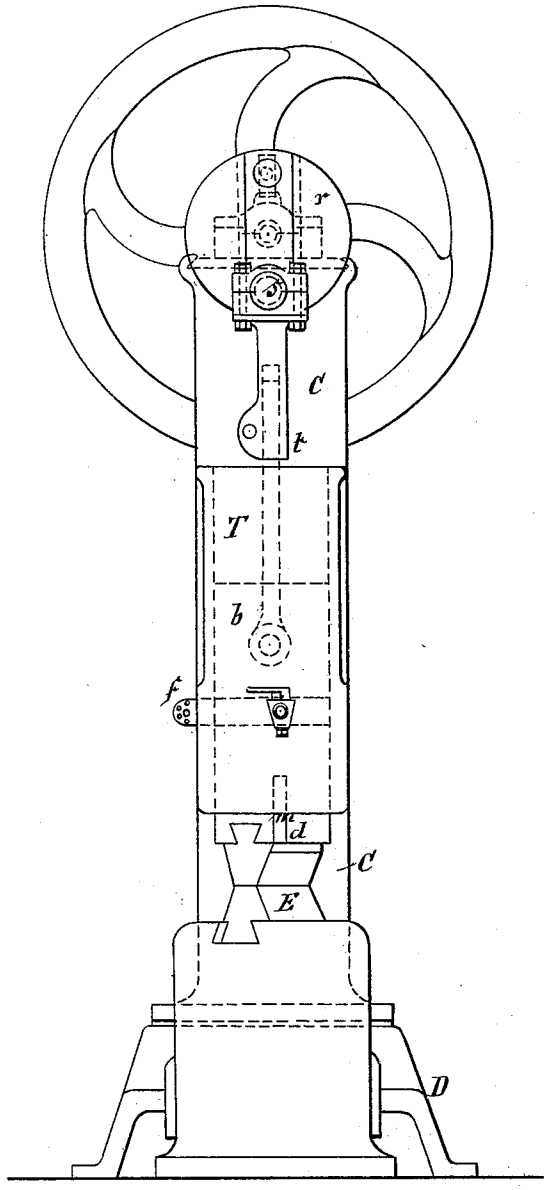
(No Model.) 2 Sheets—Sheet 1.

C. A. ARNS.

PNEUMATIC HAMMER.

No. 337,728. Patented Mar. 9, 1886.

Fig. 1.



Witnesses

J. H. White

J. W. Reynolds

Carl Arnold Arns

per O. E. Duffy

Atty.

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

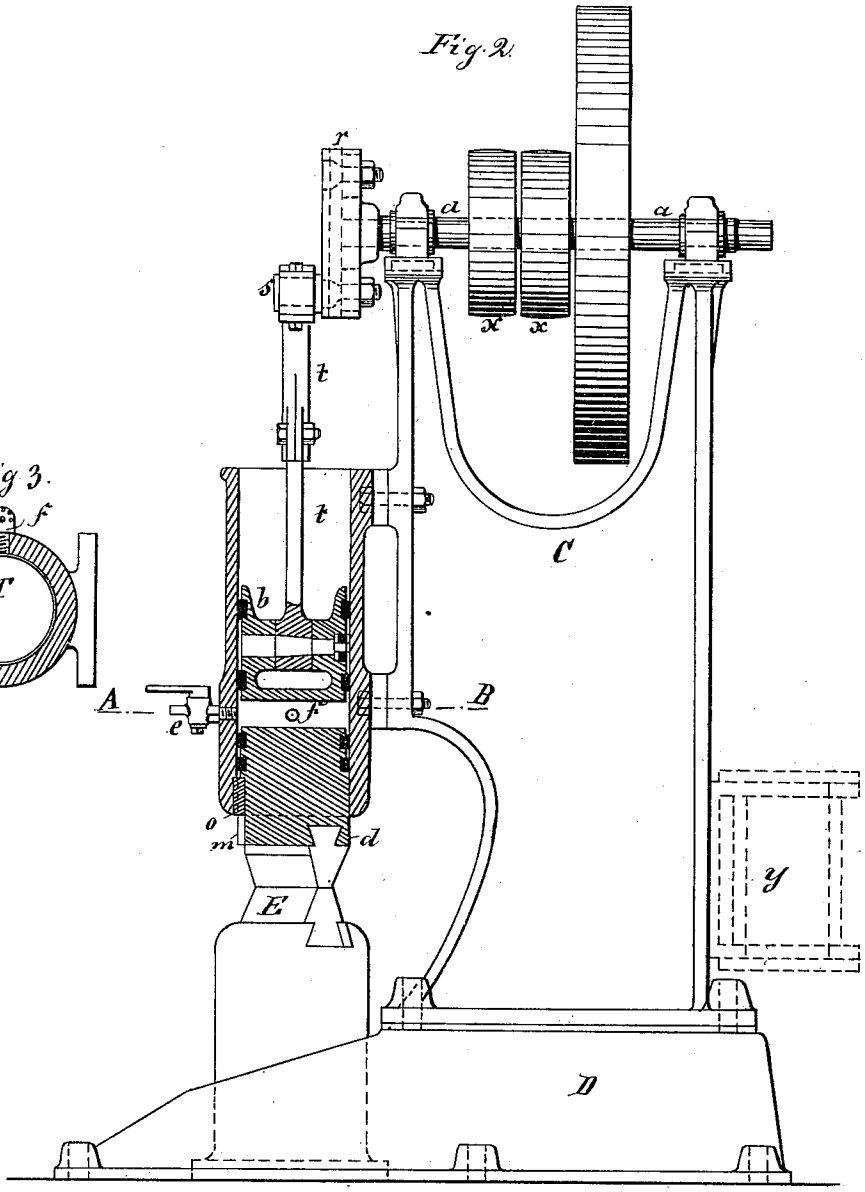
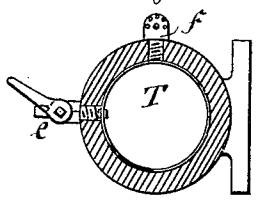


Fig 3.



Witnesses
J. F. White
Jno. Reynolds

Carl Arnold Arns
per O. E. Duffy
Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

CARL ARNOLD ARNS, OF REMSCHEID, PRUSSIA, GERMANY.

PNEUMATIC HAMMER.

SPECIFICATION forming part of Letters Patent No. 337,728, dated March 9, 1886.

Application filed October 23, 1884. Serial No. 146,303. (No model.) Patented in Germany September 6, 1884, No. 31,975; in England September 15, 1884, No. 12,433; in Belgium October 15, 1884, No. 66,422; in Austria-Hungary November 22, 1884, No. 35,511 and No. 53,931, and in France February 12, 1885, No. 164,663.

To all whom it may concern:

Be it known that I, CARL ARNOLD ARNS, a subject of the King of Prussia, residing at Remscheid, Prussia, Germany, have invented new and useful Improvements in Pneumatic Hammers, of which the following is a specification.

This invention relates to a hammer caused to rise and descend by pneumatic pressure, which can be regulated by means of a cock or valve, as I will describe, referring to the accompanying drawings.

Figure 1 is a front elevation, Fig. 2 is a side elevation, partly in section, and Fig. 3 is a sectional plan on A B of Fig. 2, of a hammer constructed according to this invention.

The framing C, which stands on a base, D, has mounted in bearings at its top a shaft, *a*, which may be driven by hand or by pulleys *x*, or by a separate engine, the cylinder of which is indicated by dotted lines at *y*. On the end of the shaft *a* is mounted a crank-disk, *n*, having a crank-pin, *s*, linked by a connecting-rod, *t*, to a piston, *b*, working in a cylinder, T, attached to the framing. The crank-pin is adjustable on the crank disk or plate. In the same cylinder T is fitted the hammer head or plunger *d*, which is prevented from turning by a feather, *o*, fixed in the cylinder, and fitting a slot, *m*, of the plunger. The cylinder T has at about its middle an opening fitted with a cock or valve, *e*. This can be adjusted by hand, and also an opening, *f*, provided with a check-valve opening outward, so as to allow the escape of any excess of air if *e* should be entirely closed while the hammer is working. The connecting-rod *t* is made adjustable.

As the piston *b* ascends, creating a partial vacuum below it, the atmospheric pressure causes the hammer-plunger *d* to ascend, and then the descent of the piston *b*, compressing the air under it, causes the hammer head or plunger *d* to descend, striking the material on the anvil E with greater or less force, according as the escape of the air is more or less throttled.

The stroke of the hammer may be varied by altering the throw of the crank *s* and the length of the connecting-rod *t*.

The valve *e* is of ordinary construction, and is operated by hand, the operator opening or closing it more or less to regulate the pressure in the cylinder between the piston and hammer. If there is too great a pressure to be relieved by this valve, no breakage can occur, for the reason that all excess over a certain pressure will be relieved by the check-valve *f*.

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

In combination, the shaft *a*, face-plate *r*, adjustable crank-pin *s*, pitman *t*, piston *b*, cylinder T, hammer D, the cylinder having space between piston and hammer, and the valve *e* and check-valve *f*, opening from said space, as set forth.

In testimony whereof I have hereto set my hand in the presence of two subscribing witnesses.

CARL ARNOLD ARNS.

Witnesses:

ALEX. SCHOLZE,

G. HARRISON SMITH.