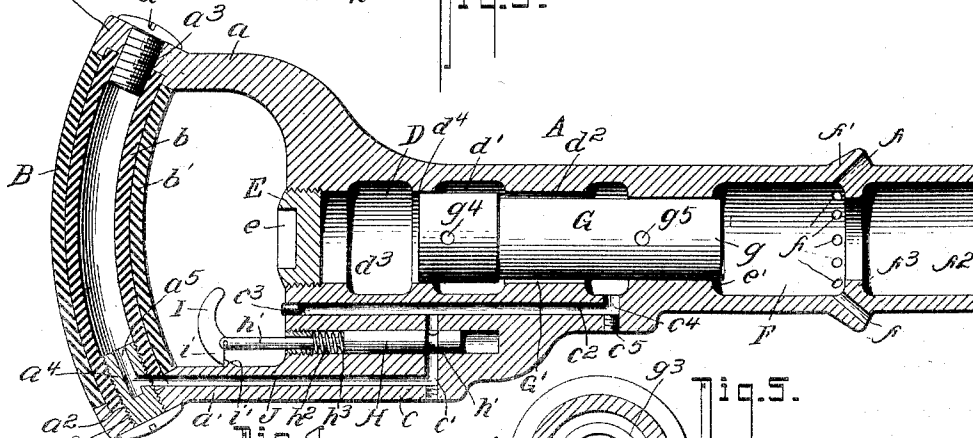
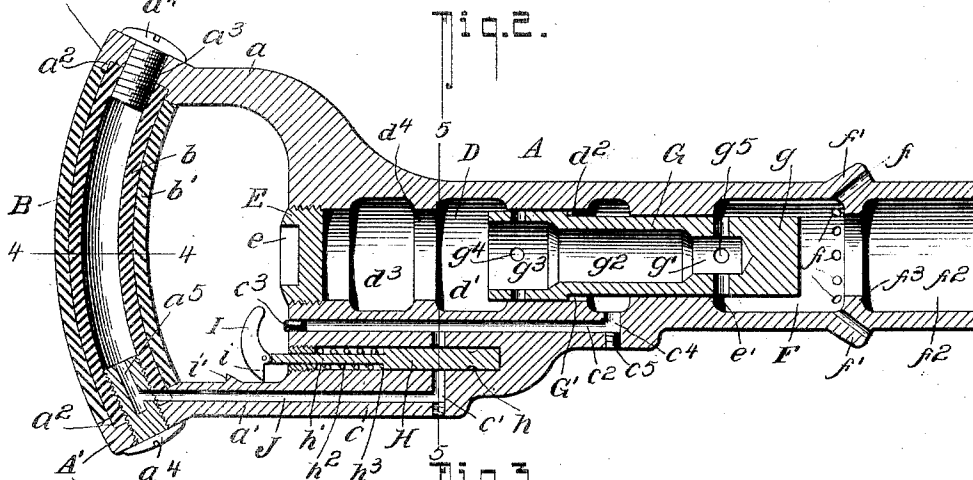
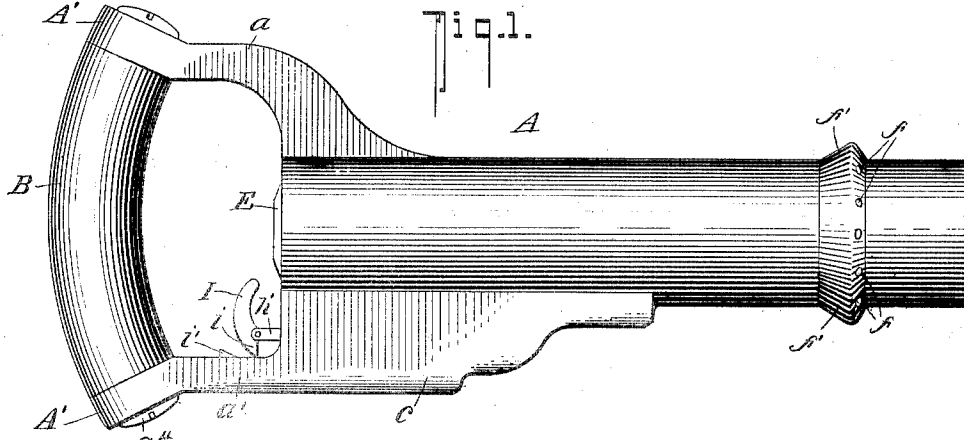


No. 775,863.

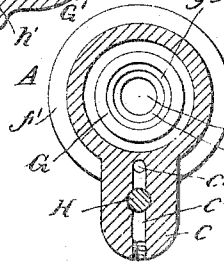
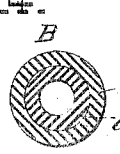
PATENTED NOV. 22, 1904.

C. J. SMITH.
PNEUMATIC HAMMER.
APPLICATION FILED OCT. 14, 1904.

NO MODEL.



WITNESSES:
F. C. Gibson.
John T. Schrott,



INVENTOR
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UNITED STATES PATENT OFFICE.

CLARK J. SMITH, OF OTTUMWA, IOWA.

PNEUMATIC HAMMER.

SPECIFICATION forming part of Letters Patent No. 775,863, dated November 22, 1904.

Original application filed May 23, 1904, Serial No. 209,332. Divided and this application filed October 14, 1904. Serial No. 228,447.
(No model.)

To all whom it may concern:

Be it known that I, CLARK J. SMITH, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented a new and Improved Pneumatic Hammer and Drill, of which the following is a specification.

My present invention, which forms a divisional part of my copending application, No. 209,332, filed May 23, 1904, relates to certain new and useful improvements in pneumatic hammers and drills; and my present invention particularly seeks to provide an improved handle which is so arranged and constructed as to relieve the hand and arm of the operator from the jar and vibration incident to the use of tools of this character.

In tools of this character the jar or vibration is not only unpleasant, but dangerous to the health, in that it causes the arm to swell and become numb and sore.

My present invention is so arranged and constructed that the handle will be sufficiently elastic to prevent injurious effects and at the same time sufficiently rigid to enable a successful operation of the tool.

With other objects in view, which will hereinafter be apparent, the invention includes certain novel construction, operation, and arrangement of parts, all of which will be first described in detail and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my invention. Fig. 2 is a vertical longitudinal section thereof. Fig. 3 is a similar view, the parts being in another position. Fig. 4 is a cross-section on the lines 4-4 of Fig. 2. Fig. 5 is a cross-section on the line 5-5 of Fig. 2.

Referring now to the accompanying drawings, in which like letters of reference indicate like parts in all the figures, it will be seen that the frame A is provided with an upper handle-arm *a* and a lower handle-arm *a'*, which arms terminate in outwardly-extending arms *A'*, each provided with a recess *a'' a''* and a threaded bore *a''' a'''*, into which the screw-securing members *a'' a''* are held. The lower securing member *a''* is provided with an air-passage *a'''* for a purpose presently to appear.

The handle B is composed of elastic tubing,

preferably rubber hose, and in the preferred form of my invention consists of two sections, an inner section *b*, having its ends fitted into the recesses *a''* of the handle-arms, and an outer section *b'*, surrounding the inner section and abutting against said handle-arms.

The frame of the handle, which is preferably formed of a single piece of cast metal, is provided with a cylindrical casing A, having at its lower side an elongated rib *c*, in the bottom of which is located an air-port *c'*, tapped for the receipt of the rubber hose or other means of supplying compressed air to the hammer.

The air-port *c'* communicates with the longitudinally-extended air-passage *c''*, closed at its outer end by means of a screw-plug *c'''*, and the said passage terminates in an inwardly-extending passage *c''*, passing through the rib of the frame and closed at its outer end by the screw-plug *c'''*, as clearly shown in Fig. 2 of the drawings.

The casing C is provided on its interior with a cylindrical chamber D, which is divided into a series of inwardly-projecting annular flanges. The inwardly-extending passages *c''* open into an air-chamber D, to the rear of which is a chamber *d'*, separated from the chamber D by means of an annular flange *d''*, and the said chamber *d'* communicates with the rear chamber *d''*, which is separated from the chamber *d'* by means of an annular guide-flange *d'''* of equal diameter with the flange *d''*, and the interior of the casing is closed at the rear end by the screw-threaded plug E, provided with a square hole *e* for the insertion of the wrench or other similar instrument.

e' designates an annular flange of less diameter than the guide-flanges *d''' d'''*, and the different flanges serve as a guideway for the reciprocating member heretofore referred to.

In front of the flange *e'* is an air-discharge chamber F, provided with a series of diagonally-extending discharge-openings *f'*, arranged to discharge through an annular discharge, so that as the air is discharged it will flow out in a funnel shape and serve to force away the dust and chips from the face of the operator, and thereby facilitating ease and certainty of operation. The end *f''* of the

casing is open for the insertion of the hammer, drill, or other similar implements which are adapted to abut against the shoulder f^3 in front of the discharge-opening.

5 Within the interior of the casing is a reciprocating member G, of hardened steel, provided with a solid head g , adapted to strike the tool, and provided on its interior with forward, middle, and rear bores g' g^2 g^3 , respectively, of increasing size. The rear end of
10 the reciprocating member is enlarged to provide an annular discharge G' , and the rear bore is provided with air-inlet openings g^4 for the admission of air. The valve-bore g' is
15 provided with a vent-opening g^5 , adapted to vent air in the discharge-chamber F when the chamber is in its projected position, as shown in Fig. 2. The air-inlet port is controlled by
20 means of a valve H, provided with an annular groove h , adapted to allow of the admission of air when in line with the port c' , as shown in Fig. 3, and adapted to shut off the
25 supply of air when in its projected position, as shown in Fig. 2. The valve is provided with a handle h' of lesser diameter than the head portion, and the said handle is surrounded by a coil-spring h^2 , which abuts against a shoulder h^3 and serves to keep the valve in its closed position.

30 The handle portion of the valve projects outside of the casing and is provided with a pivoted trigger I, having a catch portion i , adapted to be caught and held by an abutment i' on the handle member a' when the valve is drawn
35 back, as shown in Fig. 3, and to be released from said abutment by slightly turning the trigger to one side to clear said abutment. This arrangement allows the valve to be open
40 and located, so that it will not be necessary for the operator to hold the valve retracted by means of his finger, and thereby avoids a tiresome and difficult operation in some classes of work.

So far as described, it will be seen that air
45 is supplied to the interior of the handle through the port or passage J, which leads from the air-valve c' and communicates with the passage a^5 in the valve a^4 , so that when the compressed air is admitted to the hammer
50 for the purpose of operating the same a pressure will be created within the handle, which serves to provide a firm support for the operator's hands and which is at the same time sufficiently flexed to prevent jar or vibration
55 of the reciprocating member from being communicated to the hand and arm of the operator.

In operation the valve is drawn back to the position shown in Fig. 3, and air is admitted
60 through the passage c^2 to the end chamber I, the trigger being locked into position to prevent the return of the valve. The admitted air striking the shoulder G when the reciprocating member is in its projected position forces the same back into the chamber d' , allowing the air to pass around the small por-

tion of the reciprocating member inside the walls of the flanges a^2 . The air will be then admitted into the inlet on the reciprocating member, the head of which will have been drawn back sufficiently to close the vent-opening g^5 , so that the admitted air will drive the member forward to strike a blow and to assume the position shown in Fig. 2 prior to the striking of successive blows.

After the reciprocating member has been
75 projected to its fullest extent the air will vent into the discharge-chamber F and out of the radially-arranged discharge-openings f' . During the operation of the hammer the compressed air will be admitted into the rubber
80 handle to inflate the same and to afford a firm support for the operator's hand. After the handle has been inflated the screw member a^4 may be turned to cut off communication between the passage a^5 and the passage J, if desired.

The parts are so arranged that they may be easily removed for repairing and cleaning, and the casing is of such construction which enables it to be cast of a single piece of metal,
90 and therefore reduces the price of manufacture and strengthens the construction.

Instead of forcing the compressed air into the handle member B, I may allow the air to remain at atmospheric pressure, if desired,
95 and when this is the case the screw a^4 is turned to shut off the passage J from communication with the passage a^5 before the compressed-air-generating member has been connected to the hammer.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the advantages, operation, and construction of my invention will be readily apparent to those skilled in the art to which it appertains, and while I have described a complete hammer mechanism in the foregoing specification and have shown clearly the co-operative arrangement between the handle
100 and the remaining parts, yet I desire it understood that in this specification I do not claim the specific construction of reciprocating hammer member, as the same forms the subject-matter of my copending application hereinbefore referred to.

I also desire it understood that slight changes in the construction, operation, and arrangement may be made without departing from the invention or the scope of the appended claims.

Having thus described my invention, what I claim, and desire to secure by Letter Patent, is—

1. In a pneumatic tool, the combination of a frame having therein an air-inlet port, a reciprocating member within the frame, a handle formed of elastic tubular material, and an air-supply passage leading from the interior of the handle to the air-inlet port.

2. In a pneumatic tool, the combination of a

frame comprising a shell or casing, arms rear-
wardly extending therefrom, one of said arms
being provided with an air-passage, an air-
inlet port with which said passage communi-
cates, a handle connected to the arms and
composed of flexible tubular material, said
air-supply passage communicating with the
interior of the said handle, and a reciprocating
member within said casing.

3. In a pneumatic tool, the combination of a
frame comprising a shell or casing, having an
air-inlet passage, a reciprocating member
mounted within said shell or casing, arms rear-
wardly projecting from said shell or casing,
one of said arms being provided with an air-
passage communicating with said air-inlet
passage, diverging heads having countersunk
portions formed at the ends of said arms,
screws projecting through said heads, a handle
mounted between said heads and held in
position by said screws, said handle members
composed of elastic tubular material adapted
to enter said countersunk portions of the
heads, one of said screws having an air-pas-

sage adapted to register with the air-passage
in the arms, all being arranged substantially
as shown and described.

4. In a pneumatic tool, the combination of a
frame comprising a shell or casing, arms rear-
wardly projecting therefrom; one of said arms
being provided with an air-passage, said arms
terminating in diverging heads having coun-
tersunk portions, screws projecting through
said heads, one of said screws being provided
with an air-passage adapted to aline with the
air-passage in the arm, and said casing hav-
ing an air-supply port leading to the interior
thereof, a handle mounted upon the project-
ing screws and composed of two parts, one
of said parts consisting of elastic tubular
material adapted to seat in the countersunk
portion of the heads and fit within the other
part, all being arranged substantially as shown
and described.

CLARK J. SMITH.

Witnesses:

GEO. F. HEINDEL,
EDITH HATCH.