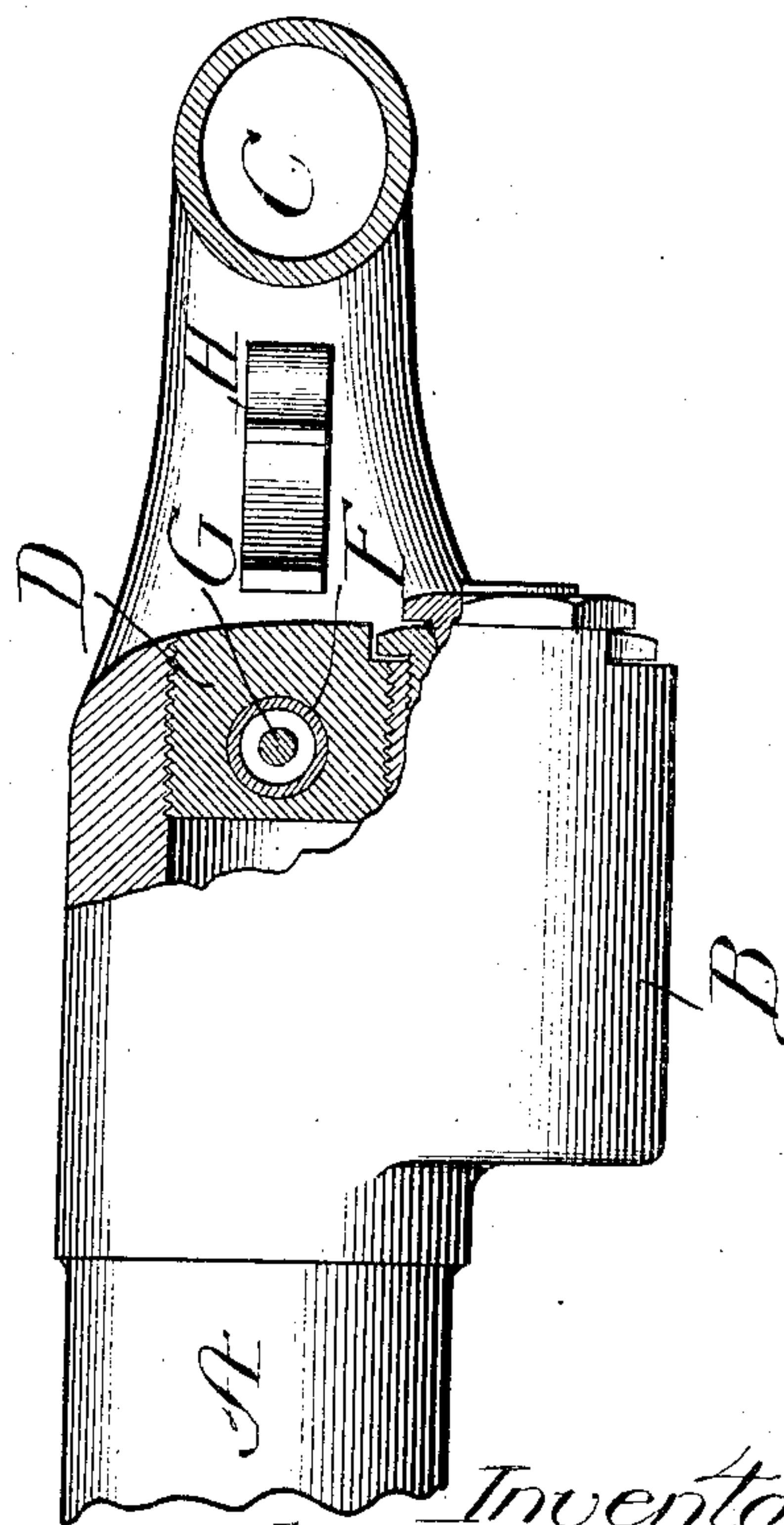
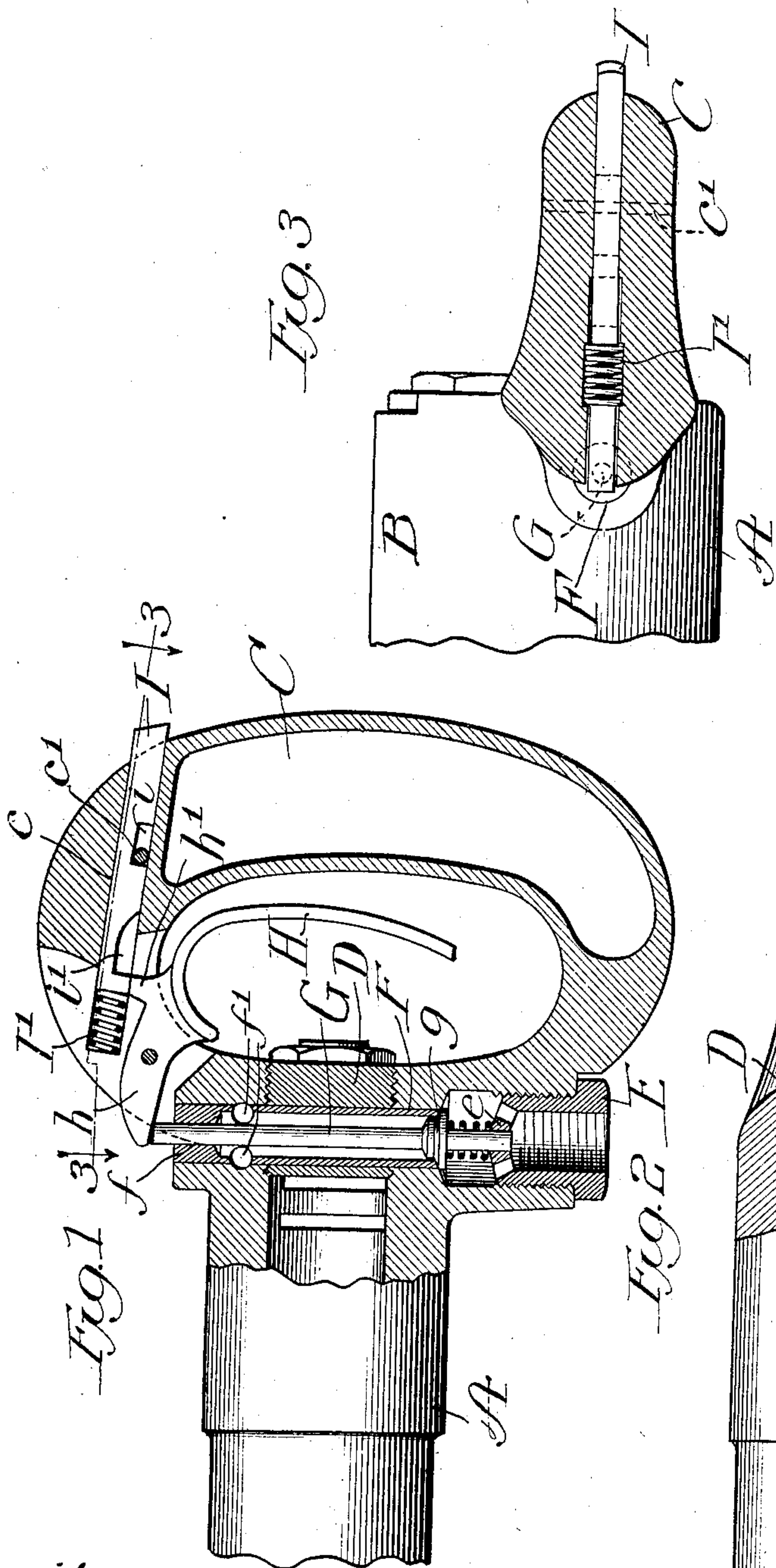


No. 813,110.

PATENTED FEB. 20, 1906.

R. A. NORLING.
THROTTLE VALVE.

APPLICATION FILED MAY 15, 1905.



Witnesses
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UNITED STATES PATENT OFFICE.

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THROTTLE-VALVE.

No. 813,110.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed May 15, 1905. Serial No. 260,525.

To all whom it may concern:

Be it known that I, REINHOLD A. NOR-
LING, a citizen of the United States, and a
resident of Aurora, in the county of Kane and
State of Illinois, have invented certain new
and useful Improvements in Throttle-Valves;
and I do hereby declare that the following is
a full, clear, and exact description thereof,
reference being had to the accompanying
drawings, and to the letters of reference
marked thereon, which form a part of this
specification.

This invention relates to throttle-valves
for portable pneumatic hammers or devices
of that class embracing a barrel or cylinder, a
piston or plunger adapted to slide therein,
and a controlling-valve through which the
air or other fluid under pressure is admitted
to and permitted to escape from the opposite
ends of the cylinder or barrel to give recipro-
catory movement to the plunger therein.

The tool illustrated in the accompanying
drawings is designed for use as a riveting-
hammer; but the same features of construc-
tion illustrated in said drawings and herein
claimed may be employed in a tool for chip-
ping or other purposes.

The invention consists in the matters here-
inafter described, and more particularly
pointed out in the appended claims.

As shown in the accompanying drawings,
Figure 1 is a view in side elevation of a tool
embodying my invention, showing the throt-
tle-valve in central longitudinal section. Fig.
2 is a cross-section of the same, taken trans-
versely through the throttle-valve and han-
dle. Fig. 3 is a detail section taken upon
line 3 3 of Fig. 1.

As shown in said drawings, A indicates the
working cylinder or barrel of the tool. On
one side of the cylinder at its inner end is lo-
cated an extension or projection B, forming
the valve-casing of a controlling-valve.

C indicates a handle, which is made inte-
gral with the inner end of the cylinder A.
The said cylinder A is originally provided
with a bore extending through the same from
end to end, and said bore is closed at the in-
ner end of the cylinder by means of a plug D,
inserted in the inner end of the bore and se-
cured therein by a screw-threaded connec-
tion.

The throttle-valve constituting my inven-

tion is located in the inner end of the bar-
rel adjacent to the handle and generally par-
allel therewith, said throttle-valve passing
through the plug D and the parts of the bar-
rel adjacent thereto. Referring to the con-
struction of the said throttle-valve, the
transverse bore or passage in which the throt-
tle-valve is located opens at its ends through
the outer surface of the opposite side walls of
the cylinder, and one end of said bore consti-
tutes a supply-passage or inlet for the air or
other fluid under pressure. In said inlet end
of the bore or passage is inserted a sleeve or
nipple E, having interior screw-threads for
attachment thereto of the pipe or hose
through which air is supplied to the tool.
This nipple has external screw-threads en-
gaging the corresponding screw-threads in
the end of said bore or passage, which is en-
larged to receive it. Within said bore or pas-
sage is located a tubular valve-bushing F,
which extends through the plug D and into
the wall of the cylinder at either side of said
plug. Within said bushing is arranged lon-
gitudinally a valve-stem G. At the inlet end
of said bore or passage said valve-stem G is
provided with a valve-disk *g*, adapted to bear
against a valve-seat formed on the adjacent
end of the bushing F. The opposite end of
said valve-stem extends through and fits
closely within a guide-aperture *f*, formed in
the end of the valve-bushing remote from the
air-inlet. Said valve-stem is adapted for con-
tact with an arm *h* on an actuating-lever or
trigger H, pivotally mounted on the handle,
with its actuating-arm extending along the
inner face of the latter. The thimble E is
provided at its inner end with a rigidly-at-
tached central guide-ring *e*, through which
passes the adjacent end of the valve-spindle
G, and between said ring *e* and the valve-
disk *g* is located a coiled actuating-spring *G'*,
by which the valve-disk is held normally
against its seat. The bushing F is provided
between its ends with outlet-ports *f'* *f'*,
which communicate with passages leading to
the controlling-valve chamber. The valve-
disk *g* when in contact with its seat shuts
off communication between the air-supply
passage and the interior of the valve-bush-
ing. The valve may be opened by endwise
pressure of the trigger-arm *h* against the
said valve-spindle G, operating to open the

valve against the tension of the spring G' and the air-pressure acting on the valve-disk. Provision is made for locking the trigger from movement when in position to hold the valve closed, as follows: I is an endwise-sliding locking-bar mounted in a guide-passage c formed in the handle C adjacent to the pivoted end of the trigger H, the outer end of said locking-bar being arranged to extend beyond the outer face of the handle at one end of its part which is gripped by the hand. Said locking-bar I is held in the outward limit of its movement by a coiled spring I', located in the guide-passage c and pressing on the inner end of the bar I in such manner as to hold the outer end of said bar normally protruded from the outer face of the handle. Endwise movement of said locking-bar in both directions is, as shown, limited by means of a stop-pin c', extended transversely through the handle and engaging a notch i in the locking-bar. Said locking-bar is provided on its inner face adjacent to the trigger H with a notch i', and the trigger is provided with a lug h', which is adapted to enter said notch i' when the locking-bar is thrust inwardly against the action of the spring H', but is adapted for contact with the side face of the inner end portion of said locking-bar when the latter is thrown outwardly or in its normal position, the said lug h' and the opposed face of the locking-bar being so arranged that they will be engaged with each other when the trigger stands in its normal position or with the throttle-valve closed. When the handle C is grasped by the operator, the locking-bar I will be thrust inwardly by pressure of the hand thereon, thereby bringing the notch i' opposite the lug h' and releasing the trigger H, so that it may be moved by the pressure of the hand or fingers to open the throttle-valve.

I claim as my invention—

1. The combination with a pneumatic-motor cylinder provided with a throttle-valve bore or passage which is open at both ends and with one end of which the air-supply pipe is connected, of a cylindric valve-bushing located in said bore provided at its supply end with a valve-seat and at its opposite end with an axial guide-passage and having an intermediate exit-port, an endwise-sliding valve-stem the outer end of which extends outwardly through the guide-aperture in the bushing and which is provided with a valve-disk adapted to bear against said seat, and a guide-ring for the inner end of said stem located in the supply end of said bore outside of the valve seat and disk.

2. The combination with a pneumatic-motor cylinder provided with a throttle-valve bore or passage which is open at both ends and with one end of which the air-supply pipe is connected, of a cylindric valve-bushing located in said bore provided at its supply end

with a valve-seat and at its opposite end with an axial guide-passage and having an intermediate exit-port, an endwise-sliding valve-stem the outer end of which extends outwardly through the guide-aperture of the bushing and which is provided with a valve-disk adapted to bear against said seat, and a nipple inserted in the supply end of said bore outside of the valve seat and disk, said nipple being provided with a guide-ring for the inner end of the valve-stem.

3. The combination with a pneumatic-motor cylinder provided with a throttle-valve bore or passage which is open at both ends and with one end of which the air-supply pipe is connected, of a cylindric valve-bushing located in said bore provided at its supply end with a valve-seat and at its opposite end with an axial guide-passage and having an intermediate exit-port, an endwise-sliding valve-stem the outer end of which extends outwardly through the guide-aperture of the bushing, and which is provided with a valve-disk adapted to bear against said seat, a nipple inserted in the supply end of said bore outside of the valve seat and disk, said nipple being provided with a guide-ring for the inner end of the valve-stem, and a coiled actuating-spring surrounding the said valve-stem between the said guide-ring and the valve-disk.

4. The combination with a pneumatic-motor cylinder and handle thereon, of a throttle-valve embracing an endwise-movable valve-stem, a pivoted trigger having an actuating-arm which extends along the inner face of the handle, said trigger being adapted to act upon said valve-stem, a spring applied to hold the valve normally in its closed position, and a spring-actuated locking-detent for the trigger having a part which projects outwardly from the outer face of the handle at one end of the same.

5. The combination with a pneumatic-tool cylinder and a handle thereon, of a throttle-valve embracing an endwise-movable valve-stem, a pivoted trigger adapted to act upon said valve-stem, and having an actuating-arm which extends along the inner face of the handle, a spring applied to hold the valve normally in its closed position, and a locking-detent for the trigger embracing an endwise-movable spring-actuated locking-bar which protrudes from the outer face of the handle at one end of the same, said trigger being provided with a lug which projects toward said locking-bar, and the locking-bar having a notch or recess adapted to receive said lug to effect the release of the trigger when the bar is pushed inwardly by pressure of the hand thereon.

6. The combination with a cylinder and a plunger therein, of a handle made integral with the inner end of the cylinder, said cylinder being provided with a bore extending

through the inner end thereof, a plug inserted
in said bore for closing the inner end of the
cylinder and throttle-valve embracing a
valve-bushing which extends through the
5 said plug and the surrounding part of the
cylinder.

In testimony that I claim the foregoing as

my invention I affix my signature, in pres-
ence of two witnesses, this 10th day of May,
A. D. 1905.

REINHOLD A. NORLING.

Witnesses:

W. H. PEASE,

A. E. GRANT.