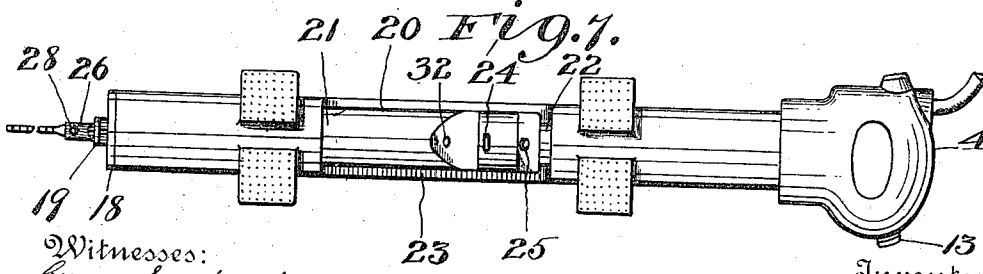
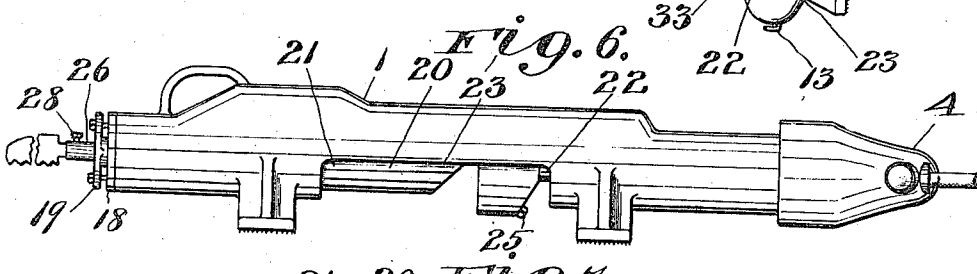
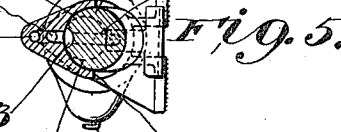
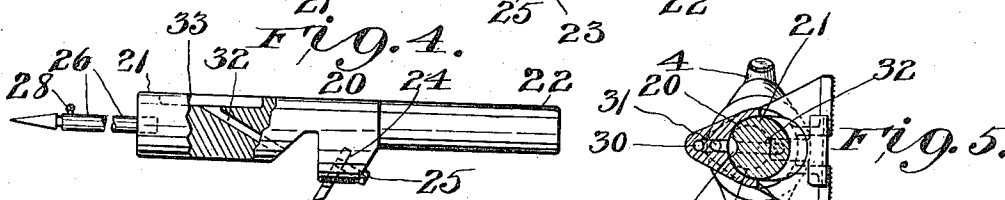
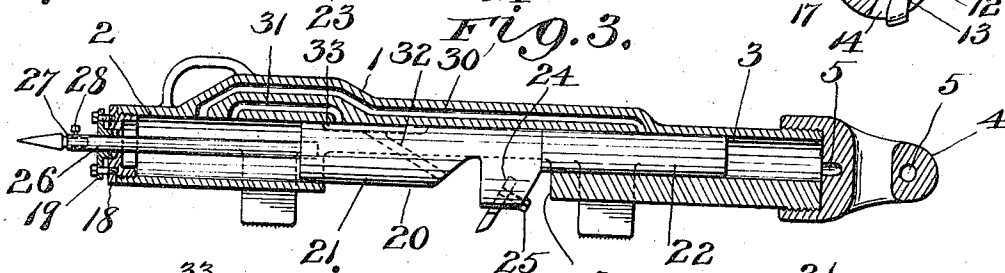
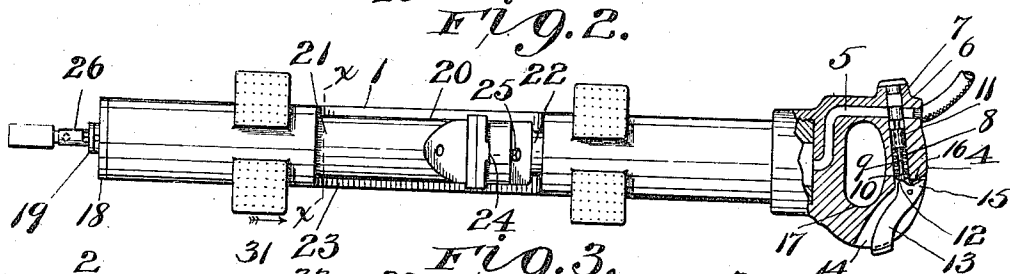
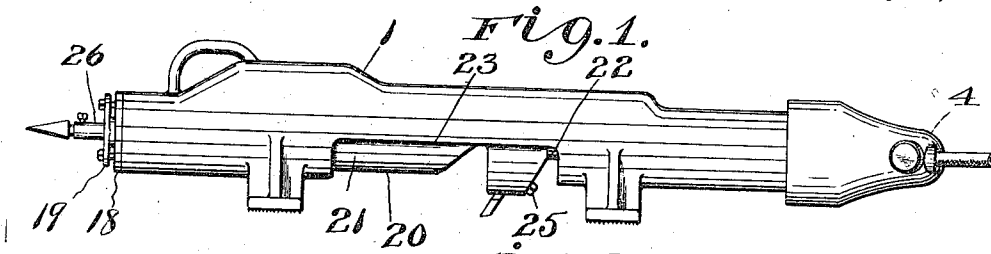


J. M. ABRAMS.
AUTOMATIC TOOL OPERATING DEVICE.
APPLICATION FILED MAY 28, 1910.

965,550.

Patented July 26, 1910.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN M. ABRAMS, OF BENTLEY MANOR, NEW YORK.

AUTOMATIC TOOL-OPERATING DEVICE.

965,550.

Specification of Letters Patent.

Patented July 26, 1910.

Application filed May 28, 1910. Serial No. 563,930.

To all whom it may concern:

Be it known that I, JOHN M. ABRAMS, a citizen of the United States, residing at Bentley Manor, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Automatic Tool-Operating Devices, of which the following is a specification.

My invention relates to improvements in tool operating devices and particularly to improvements in automatic tool operating devices.

It has for its object to provide a device, of the character above mentioned, having a piston located in a casing and adapted to be operated by a motive fluid.

It has for a further object to provide means for controlling the admission of the motive fluid into the casing of the device.

It has for a further object to provide means adapted to prevent rotatable movement of the piston within its casing.

It has for a further object to provide the piston with means adapting it to have a tool secured thereto.

It has for a further object to provide the piston with means adapted to direct the exhaust from its casing upon the surface or body being operated upon and remove the parts cut or detached therefrom by the tool.

It has for a further object to so construct the piston and its casing, that the motive fluid will bear against a larger surface of the piston in returning it than in moving it forward.

It has for a further object to provide a piston having eccentric portions engaging eccentric bores, in the casing and being complementary thereto.

It has for a still further object to provide a device of the character above mentioned having advantages in point of simple, durable and inexpensive construction and perfect operation.

In the drawings:—Figure 1 is a side view of my automatic tool operating device; Fig. 2, a bottom plan view thereof partly broken away; Fig. 3, a longitudinal vertical sectional view thereof; Fig. 4, a side elevation of the piston removed and partly broken away; Fig. 5, a sectional view taken on the line $x-x$ of Fig. 2; Fig. 6, a side view of my automatic tool operating device with tool removed; Fig. 7, a bottom plan view thereof.

Referring to the drawings illustrating my invention and in which like reference char-

acters designate corresponding parts, 1 designates the casing which is provided with eccentric bores 2 and 3 extending from the forward and rear ends thereof respectively, the forward bore being of greater diameter than the rear bore. A handle 4 is secured on the rear threaded end of the casing and is provided with a passage 5 for the admission of a motive fluid, for instance, gas, into the casing. The passage 5 is normally closed by a valve 6 slidable in a bore 7 and provided with a spring 8 on its stem 9, between the head 10 thereon and a plug 11 fixed in said bore and through which said stem works. The head of the valve bears against the fork 12 of a lever 13 which is fulcrumed in a recess 14 and the fork 15 of said lever bears against an abutment 16, by which arrangement the lever will be turned on its pivot, by the operator inserting his fingers through the hole 17 and then closing his hand and the valve 6 will be forced upward by the lever against the action of the spring 9 and unclose the passage 5. A handle is also provided on the forward end of the casing. A cap 18 is secured in the forward threaded end of the casing and is provided with a stuffing box 19. A piston 20 is located in said casing and is provided with eccentric portions 21 and 22 which are complementary to and engage the eccentric bores 2 and 3 respectively of the casing, thereby preventing rotary movement of the piston. The portion 21 of the piston projects through an opening 23 in the under part of the casing and is provided with a socket 24 adapted to retain a tool and a threaded hole into which a screw 25 extends and engages and secures the tool in place. By reason of the bore 2 and the complementary portion of the piston being of greater diameter than the bore 3 and the complementary portion 22 of the piston, a greater surface is offered for the motive fluid to bear against in returning the piston than in moving it forward and consequently it is quickly returned. A rod 26 is secured in the forward end of the piston and extends through the cap 18 and the stuffing box 19, and is provided with a socket 27 adapted to receive a tool and a threaded hole into which a screw 28 extends and engages and secures the tool in place.

The casing is provided with a bypass adapted to establish communication between the complementary eccentric bores of the

casing and an exhaust passage 31 adapted to establish communication between the bore 2 and an exhaust passage 32 extending through the piston in front of the tool. The inner
 5 end of the exhaust passage 32 extends into an elongated slot 33 with which the rear end of the exhaust passage 31 is in constant communication, thus when the piston is reciprocated, by the motive fluid, the exhaust from
 10 the bore 2 is constantly directed in front of the tool in the socket 24 and removes the parts cut or detached by the tool from the body being operated upon.

The operation is as follows:—The device
 15 is placed upon the body to be operated upon and held thereon by the handles, motive fluid, for instance, compressed gas, is admitted into the bore 3 through the inlet passage 5 and forces the piston forward uncovering the bypass 30, whereupon the gas
 20 passes through said bypass into the bore 2 and forces the piston rearward and during such movement gas escapes through the exhaust passage 31 in the casing and the
 25 slot 33 and exhaust passage 32 in the piston and removes the parts cut or detached, by the tool secured in the socket 24, from the body being operated upon.

I do not wish to be understood as limiting
 30 myself to the details of construction and arrangement as herein described and illustrated, as it is manifest that variations and modifications may be made in the features of construction and arrangement in the
 35 adaptation of the device to various conditions of use without departing from the spirit and scope of my invention and improvements. I therefore reserve the right to all such variations and modifications as
 40 properly fall within the scope of my invention and the terms of the following claims.

I claim:

1. In a device of the character set forth,

a casing having a bypass and an exhaust passage, and a piston in said casing operated
 45 by a motive fluid and having means adapting a tool to be secured thereto and an exhaust passage adapted to communicate with the exhaust passage of the casing thereby providing means adapting the
 50 exhaust from the casing to remove the parts cut or detached by the tool, from the body being operated upon, substantially as described.

2. In a device of the character set forth,
 55 a casing having a bypass and an exhaust passage and a piston in said casing operated by a motive fluid and having means adapting a tool to be secured thereto and an exhaust passage in constant communication
 60 with the exhaust passage of the casing, thereby providing means adapting the exhaust from the casing to remove the parts cut or detached by the tool, from the body being operated upon, substantially as described.
 65

3. In a device of the character set forth, a casing having a bypass and an exhaust passage and a piston in said casing operated
 70 by a motive fluid and having means adapting a tool to be secured thereto, a groove in constant communication with the exhaust passage of the casing and an exhaust passage in communication with said groove, thereby providing means adapting the
 75 exhaust from the casing to remove the parts cut or detached by the tool, from the body being operated upon, substantially as described.

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

JOHN M. ABRAMS.

Witnesses:

GUNNAR ENGSTRAND,
 PAUL B. OATMAN.