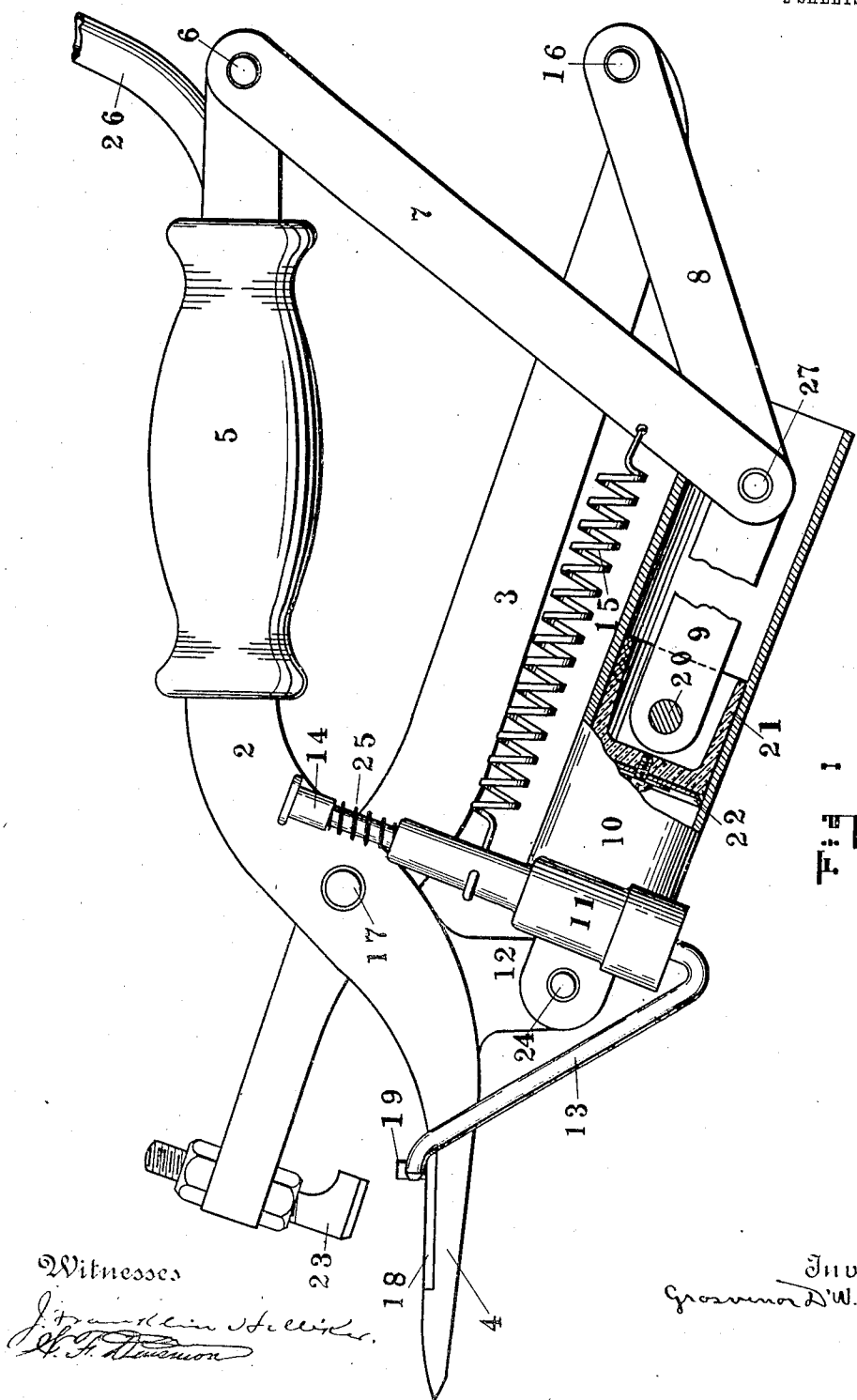


No. 878,548.

PATENTED FEB. 11, 1908.

G. D'W. MARCY.
PNEUMATIC TOOL.
APPLICATION FILED OCT. 1, 1907.

2 SHEETS—SHEET 1.



Witnesses

J. H. Klein
H. J. Harrison

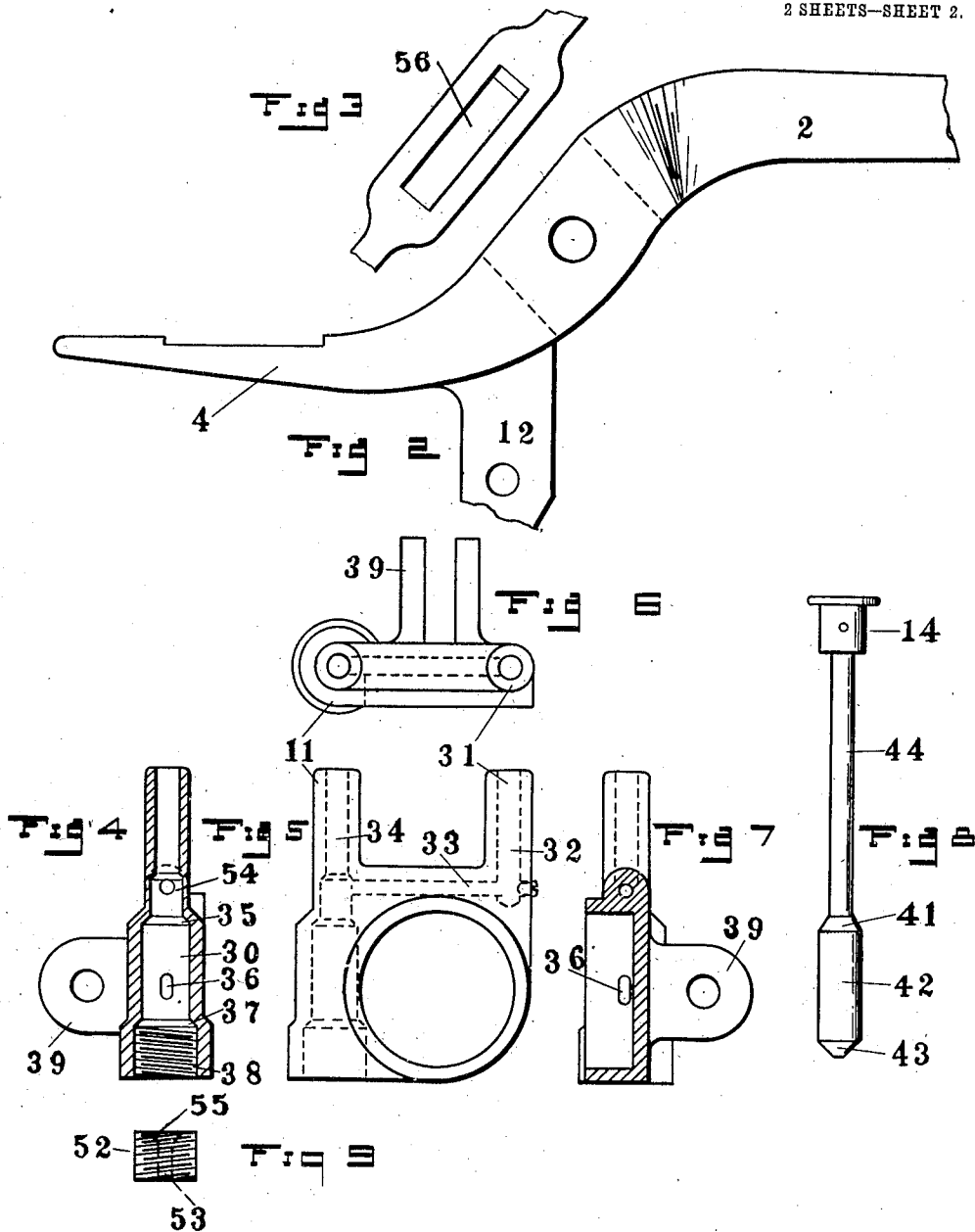
Inventor
G. D'W. Marcy

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2 SHEETS—SHEET 2.



Witnesses
J. Franklin Hickey
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UNITED STATES PATENT OFFICE.

GROSVENOR D'W. MARCY, OF DORCHESTER, MASSACHUSETTS.

PNEUMATIC TOOL.

No. 878,548.

Specification of Letters Patent.

Patented Feb. 11, 1908.

Application filed October 1, 1907. Serial No. 395,464.

To all whom it may concern:

Be it known that GROSVENOR D'W. MARCY, a citizen of the United States, residing at Dorchester, in the county of Suffolk and State of Massachusetts, has invented certain new and useful Improvements in Pneumatic Tools, of which the following is a specification.

The object of my invention is to provide a simple, compact, and powerful device, primarily intended, and in this case shown adapted for use as a cutter for the thumb notches of an index of a dictionary, directory, or the like.

While the device is shown and described in this application as an index cutter, it is apparent that it is not limited to this use, but with minor changes it is capable of being used for cutting, punching, riveting, expanding or forming, or in any case where a hand operated tool does not give a powerful enough grip.

Broadly my invention consists of a stationary member with a movable tool carrying jaw pivoted thereto, the movable jaw being actuated through a system of links by the piston of a fluid pressure cylinder. It will be obvious that when this tool is used for cutting, punching, riveting, forming, or other purposes, any pair of cooperating tool elements, such as shear blades, punch and die, etc., may be carried by, or form part of, the members.

My invention further includes means whereby the exhaust from the cylinder removes the cuttings from the machine, and other improvements, which will be hereinafter more particularly set forth, and the invention will be defined in the appended claims, forming a part of this specification.

Reference is to be had to the accompanying drawings, in which similar reference characters indicate corresponding parts in all the figures.—

Figure 1 is a side elevation of the assembled index cutter, with part of the cylinder broken away. Figs. 2 and 3 are respectively elevation and fragmentary plan view of the stationary member. Fig. 4 is a section of the cylinder head through the valve chamber. Fig. 5 is an elevation of cylinder head, look-

ing from cylinder. Fig. 6 is a plan view of cylinder head. Fig. 7 is a section of cylinder head through center line of cylinder. Fig. 8 is an elevation of valve spindle. Fig. 9 is an elevation of exhaust valve seat.

The stationary member 2 carries the lower fixed jaw 4 at one end and is provided intermediate of its length with a suitable grip 5 by which the whole tool is held. The member 2 is also provided with an elongated slot 56 through which passes the movable member 3 of substantially the same length as the member 2, and in which it is pivoted by the pin 17. A brass gage block 18 carrying an adjustable gage 19 is set into the jaw 4, directly under the cutter. The movable jaw 3 carries at one end the cutting tool 23 secured thereto in any suitable manner. From the under side of the fixed jaw the apertured lug 12 extends downwardly and to this is attached the cylinder 22, by the cylinder head. In the cylinder is the piston 21 to which the link or connecting rod 9 is pivoted by means of pin 20.

To the end of the stationary member 2 and the movable member 3 respectively are pivoted one end of the links 7 and 8 by means of pins 6 and 16, respectively. These two links, at their lower, or free ends, and the connecting rod 9 are all pivoted together by the pin 27. It will be seen that the link 7 in swinging about the fixed point 6 guides the pin 27 along the arc of a circle centered at 6.

In the cylinder-head is located the valve mechanism, which will now be described. The cylinder-head is formed with two up-standing stems 11 and 31 which in the assembled device are positioned one on each side of the jaws. To the stem 31 is attached the flexible tube 26 conveying the compressed air or fluid to operate the device. The air is led down through the stem 31 and the horizontal passage 33 into the chamber 54 under the stem 11. The horizontal chamber 54 widens just below the passage 33 forming a valve seat 35 for the upper portion of the valve 41, formed on the valve stem, Fig. 8.

The valve spindle extends through the stem 11, terminating in the button 14 and is normally held by the spring 25 with the

bearing surface 41 against the seat 35, thus shutting off the compressed air from the valve chamber 30 and the cylinder. In the valve chamber is formed the port 36 directly opening into the head end of the cylinder. It will be seen that the button on the end of the valve spindle is conveniently located to be pressed by the thumb of the operator. At its lower end the valve chamber widens and is tapped at 38 to receive a plug 52, which is provided with the lower valve seat 55 coöperating with the lower bearing surface 43 of the valve spindle, whereby the passage 53 is opened and closed. From this passage a small tube 13 is led upwardly and terminates on the fixed jaw near the gage block. A tension spring 15 extends from the nozzle 11 to the link 7 and serves to raise the cutter after each down stroke.

20 The operation of my improved cutter is as follows: The stationary jaw 4 is inserted into the book to be indexed, resting on the page which is to bear the index character, the depth of cut being determined by the position of the gage block. The end of the valve stem is now pressed down, the surfaces 41 and 35 being separated, and air admitted to the valve chamber 30, and through the port 36 to the head end of the cylinder. The downward motion of the valve spindle has, meantime, seated valve 43 upon valve seat 55 and so, closed the passage 53.

The piston is forced along the cylinder, the pin 27 moving on the arc of a circle centered at 6, and the link 8 raises the end of the movable jaw 3 whereby the cutter is driven down through the leaves between it and the fixed jaw. At the end of the stroke the button on the valve spindle is released by the operator and it is raised by the spring 25. The passage 53 is thereupon opened and the piston is pulled back toward the head end of the cylinder by the spring 15 while the air contained in the cylinder is forced out through the tube 13 and the chips blown off the gage block.

Having thus described my invention I claim as new and desire to secure by Letters Patent—

50 1. In a device of the character described, the combination of a stationary member with a fluid pressure cylinder attached thereto and a movable member, the rear end thereof operating transversely between the stationary member and the attached cylinder.

2. In a device of the character described, a stationary member, a fluid pressure cylinder and a cylinder-head provided with lugs, in combination with a movable member, a portion thereof operating transversely between the stationary member and said cylinder.

3. In a device of the character described,

the combination of a stationary member and a fluid pressure cylinder attached thereto, 65 with a movable member, links pivoted between the rear ends of said members, the rear end of the movable member operating transversely to and from the cylinder.

4. The combination with a cylinder and piston, of stationary and movable members, the cylinder being attached to the stationary member, a connecting rod attached to the piston, links pivoted to each of the two members and at their free ends to the connecting rod, and tool elements carried by the said members. 75

5. The combination with a cylinder and piston, of a stationary member, a movable member pivoted thereto, the cylinder being 80 attached to the stationary member, a connecting rod attached to the piston, links pivoted to each of the two members, the longer link being pivoted to the stationary member, the links at their free ends pivoted 85 to the connecting rod and tool elements carried by the said members.

6. The combination with a cylinder and a piston of a cylinder head containing a double acting valve, tool elements and power multiplying means to actuate said elements. 90

7. In a device of the character described, the combination with a cylinder and piston of stationary and movable members, a pivotal connection between the two members intermediate of their length, one of said members supporting the cylinder and tool elements carried by the said members. 95

8. In a device of the character described, the combination of a cylinder, stationary and movable members, a cylinder head, a valve carried thereby, a double acting valve spindle for controlling exhaust and admission ports, and a tube connecting with the exhaust port whereby the exhaust removes 105 chips from the device.

9. In a fluid operated tool the combination of a cylinder, stationary and movable members, a cylinder head, a valve carried by said cylinder head, a valve spindle extending 110 at right angles to the cylinder, and means whereby the exhaust from the valve removes chips from the stationary member.

10. In a fluid operated tool the combination of a stationary and a movable member, 115 a cylinder having a cylinder head formed with a valve and two upstanding stems located one on each side of the stationary member, one of said stems having a passage for the actuating fluid and a valve spindle adapted to reciprocate in the other stem. 120

11. In a fluid operated tool, the combination of a stationary and a movable member, a cylinder having a cylinder head formed with a valve and an upstanding stem located 125 on one side of the stationary member and a

valve spindle for controlling the valve operating in said stem.

12. In a pneumatic tool, the combination with a cylinder and a piston, of stationary and movable members, a pivotal connection between the two members, intermediate of their length, and a spring opposing the action of the piston, one of said members sup-

porting the cylinder, and tool elements carried by the said members.

In testimony whereof I affix my signature in presence of two witnesses.

GROSVENOR D'W. MARCY.

Witnesses:

W. F. DINSMORE,

J. FRANKLIN HILLIKER.

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