

No. 731,222.

PATENTED JUNE 16, 1903.

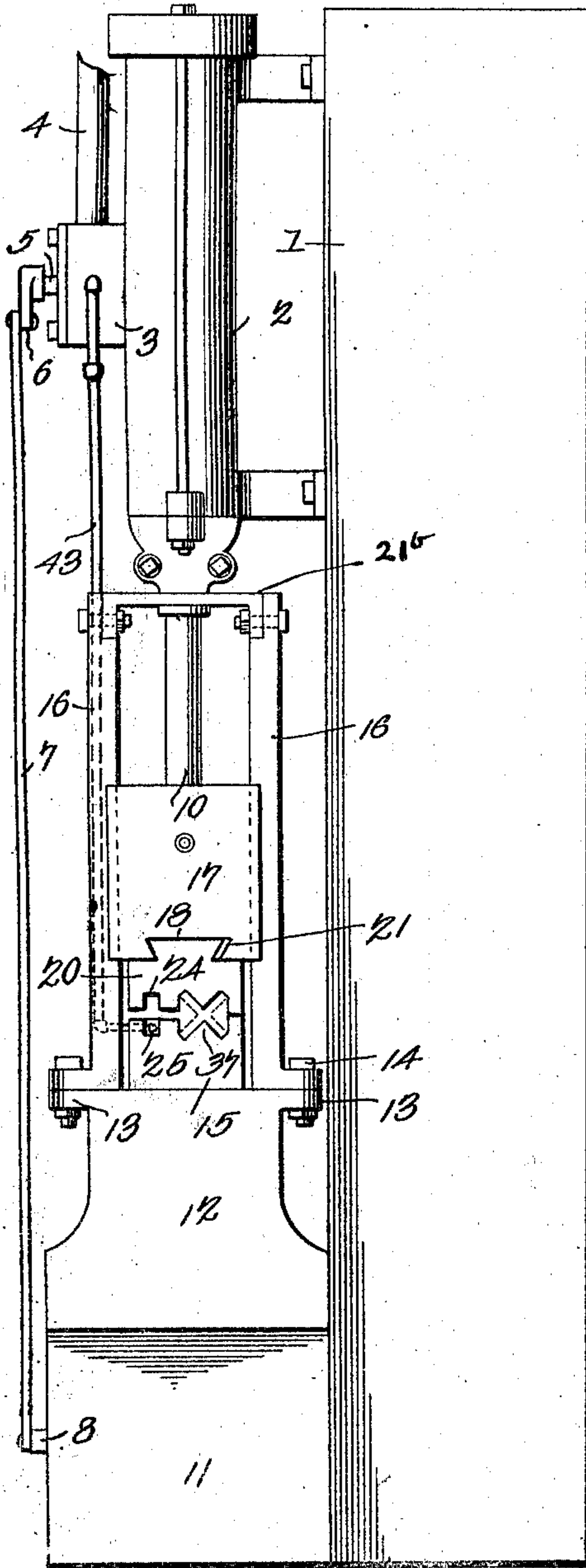
J. RETALLACK.  
DRILL SHARPENING MACHINE.

APPLICATION FILED SEPT. 20, 1902.

NO MODEL.

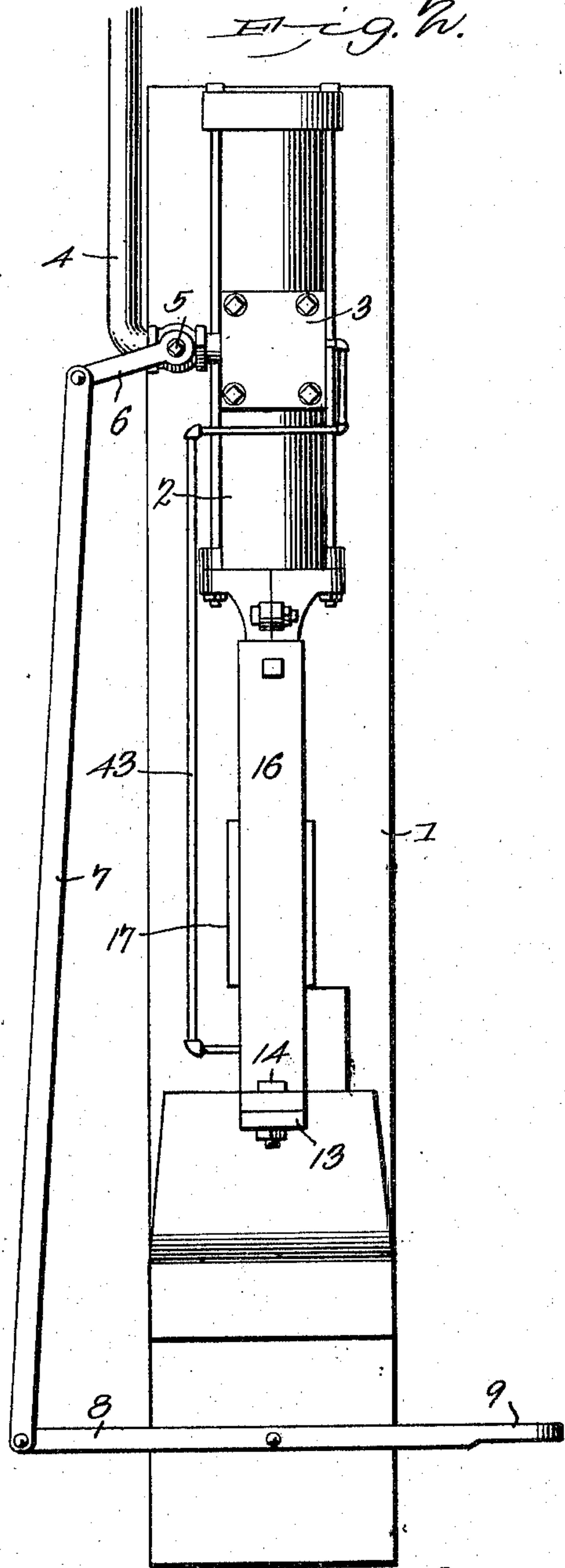
2 SHEETS—SHEET 1.

*Fig. 1.*



Witnesses  
*E. H. Sturges*  
*Wm. Bagger*

*Fig. 2.*



J. Retallack, Inventor  
by *C. Snow & Co.* Attorneys

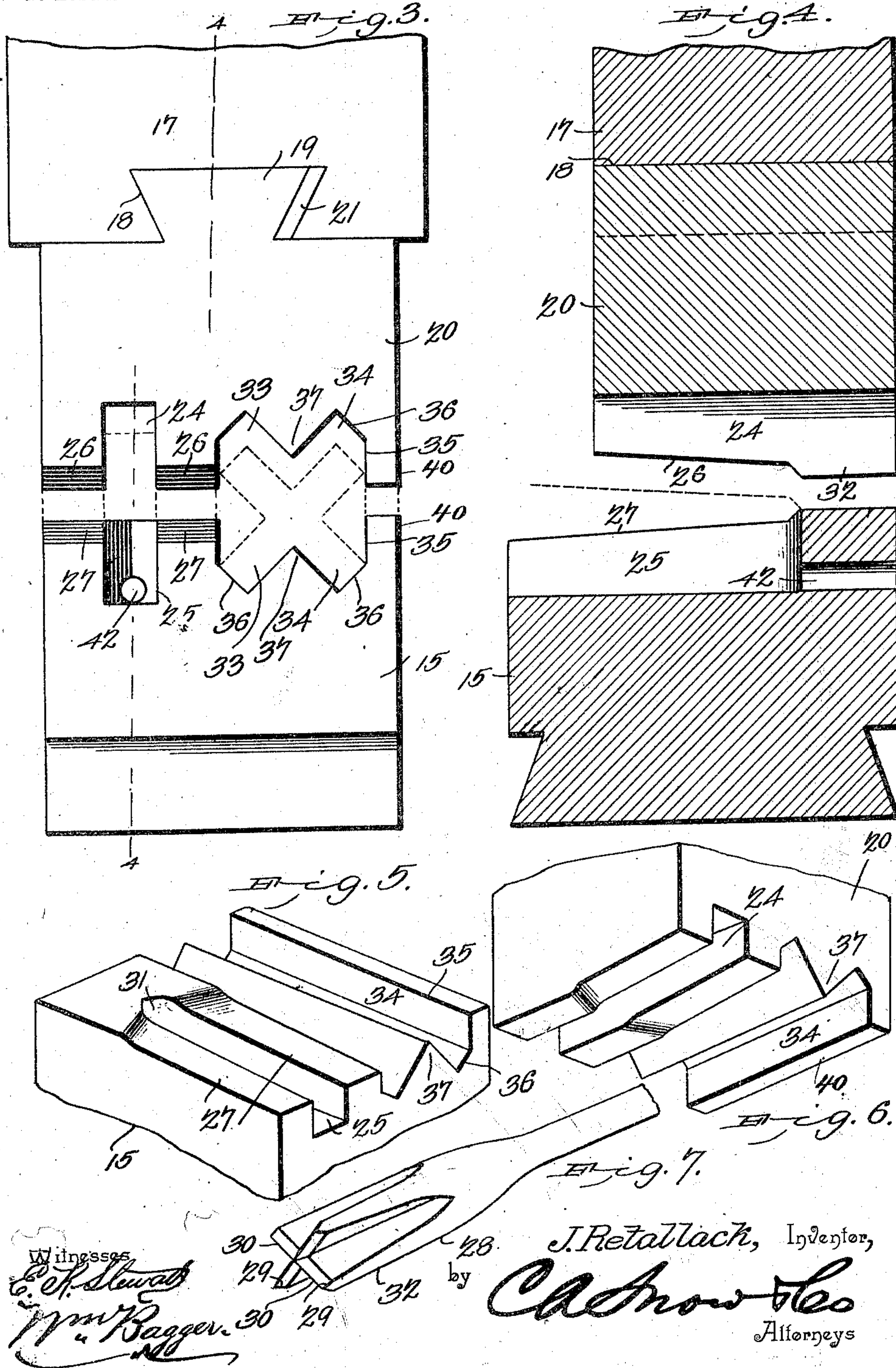
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Witnesses  
E. H. Stewart  
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## UNITED STATES PATENT OFFICE.

JOSEPH RETALLACK, OF VICTOR, COLORADO, ASSIGNOR OF ONE-HALF TO  
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## DRILL-SHARPENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 731,222, dated June 16, 1903.

Application filed September 20, 1902. Serial No. 124,234. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH RETALLACK, a citizen of the United States, residing at Victor, in the county of Teller and State of Colorado, have invented a new and useful Drill-Sharpener Machine, of which the following is a specification.

This invention relates to drill-sharpening machines of that class which are used for sharpening rock-drills such as are customarily employed in connection with pneumatic machinery for the purpose of drilling in rock. Drills of this character are usually cross-shaped in cross-section or composed of four wings disposed at right angles to each other and converging at the center, a handle being provided at one end, usually integrally with the drill, and the opposite or working end being beveled and sharpened to a working edge.

My invention has for its object to provide machinery pneumatically operated whereby drills of this class may be very quickly and effectively sharpened and put in fit condition for use without the employment of special skilled labor.

With this and other ends in view the invention consists, essentially, in a pair of dies, one constituting what may be termed an "anvil" and the other a "hammer," said anvil-die being supported stationary upon the base-frame, while the hammer-die constitutes a plunger mounted to reciprocate between vertical guides and itself attached to or connected with the lower end of the piston-rod of an air-cylinder disposed above and by means of which it may be swiftly and energetically operated.

The invention further consists in the improved construction, arrangement, and combination of the component parts of the device, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front view of a machine constructed in accordance with the principles of my invention, showing the dies in contact with each other or at rest. Fig. 2 is a side view of the same. Fig. 3 is a front view illustrating the dies and showing the upper die slightly elevated from the lower die. Fig. 4 is a sectional view taken on the line 4-4 in Fig. 3. Fig. 5 is a perspective view showing the upper face of the lower die. Fig. 6 is a view showing in perspective the opposing or under face of the upper die. Fig. 7 is a perspective view of one of the tools for the sharpening of which my invention is designed.

Corresponding parts in the several figures are indicated by similar numerals of reference.

1 designates a vertically-disposed beam, wall, or frame, to the face of which an air-cylinder 2 is suitably attached. Said cylinder is of ordinary construction, being provided with the valve-chest 3, air-induction pipe 4, controlling-valve 5, and a handle 6 upon the latter connected by means of a rod 7 with one end of a foot-lever 8, having at its opposite end a treadle 9, by means of which it may be operated.

10 designates the piston-rod, which projects through the lower head of the cylinder, and which in practice carries the hammer or upper die of my improved device.

11 designates the base, to one side of which the foot-lever 8 is pivoted. This base, either directly or upon an intervening cast-iron block 12, supports the anvil or lower die 15. The base or block 12 is also provided with laterally-extending flanges 13, connected by means of bolts 14 with the lower ends of the uprights 16, which serve as guides for a block 17, the lower end of which is dovetailed, as at 18, to receive the correspondingly dovetailed tenon 19 upon the upper side of the upper die 20, which is secured in position by means of a wedge 21. The upper ends of the uprights 16 are connected by a cross-bar 21<sup>b</sup>, having a bearing for the reciprocating piston-rod 10.

I will state that in the parts of the device thus far described I claim no especial novelty, except as regards their peculiar adaptation to the purposes of my invention, which, as already stated, resides particularly in the dies, whereby the tools to be sharpened are directly operated upon. I desire, however, to state that I do not limit myself with regard to the use of these parts; likewise, that I do not limit myself to any particular means for supporting the lower die or for connecting the upper die with the medium



through which it receives its effective reciprocating motion.

The meeting or opposing faces of the dies 15 and 20, which are preferably constructed 5 of tool-steel, while the supporting members may be ordinary cast-iron, are provided with peculiarly-shaped recesses forming the dies for the treatment of the tools subjected to their action. First, the faces of the dies are 10 provided with oppositely-disposed right-angled recesses 24 and 25, which are located at a distance from one edge of said die-blocks which is about equal to the width of one of the wings of the tool to be operated upon, 15 while the said recesses are of such a size and depth that they will exactly accommodate the two oppositely-disposed wings of such a tool. The faces of the dies adjacent to the recesses 24 and 25 are beveled, as shown at 20 26 and 27, so as to correspond exactly to the shape of the tool, the wings of which are likewise beveled or gradually tapered, so as to form the cutting edges. In Fig. 7 of the drawings, where one of these tools or the 25 working end thereof has been shown in perspective, the wings, which are designated 28, have been shown beveled, as at 29, to form the cutting edges 30. The lower die 15 is in practice extended in front of the upper die 30 20, and the recess 25 therein is not extended entirely through the same, but a back wall or web 31 is provided, forming a stop which limits the extent to which the tool may be inserted into the die. It is from the upper 35 front corner of this stop that the downward and outward bevel 27 begins. The web 31 also forms a stop to engage the parts 32 of the die adjacent to the slot 24 when the dies come together. An additional stop 40 to limit the movement of the upper die in the direction of the lower die is provided, as will be described later on, and it will be readily understood that such stops are very essential in order to prevent the tools that are being 45 operated upon from being crushed or injured between the dies. The slot or recess 24 extends entirely through the face of the upper die, as clearly shown in Fig. 1. The operation of this part of my invention is as follows: 50 The tool that is to be operated upon is inserted into the recess 25 until the cutting edge of the wing engaging said recess abuts against the rear wall or stop 31. It is obvious that at the time of the insertion the upper die is in a raised position and that the opposite wings 55 of the tool adjacent to the wing disposed in the recess 25 will rest upon the beveled surfaces 27 of the die 15. When the upper die 20 is caused to descend, the recess 24 will receive the wing of the tool opposite to that resting in the recess 25, and the impact of the blow will serve to draw the blunt edges out in the direction of the engaging or meeting portions of the dies, (designated 31 and 32.) 65 By operating the device repeatedly the wings subjected to the blows of the upper die will be quickly drawn out until good cutting edges

are formed thereon, and the position of the tool in the lower die is then reversed by simply giving it a quarter-turn, and thus exposing 70 to the blows of the upper die the two wings which previously were accommodated in the recesses 24 and 25. The operation of sharpening the drill may thus be swiftly and effectively performed. 75

In the faces of the dies adjacent to the sharpening-faces just described are formed recesses 33 and 34, having outer vertical walls 35, angular walls 36 so disposed that the said walls 36 of the opposite recesses shall be parallel to each other, and centrally-disposed 80 right-angled V-shaped ridges 37, disposed between the walls 36. It will be seen that when the dies come together the said recesses 33 and 34 will cooperate to receive between them 85 one of the tools when presented with the wings thereof in a slanting position. In this position it is the corners or angles between the wings that are subjected to the action of the V-shaped ribs or ridges 37, the edges of said 90 wings being meanwhile supported against the walls 36. The faces of the dies adjacent to the outer walls of the recesses 33 and 34 are extended to form stops 40, which operate in connection with the stops 31 and 32 to prevent the dies from coming too closely together, 95 and thereby injuriously affect the tool placed between them.

In order to prevent scale and the like from lodging and accumulating in the die-recess 100 25, I propose to avail myself of the exhaust from the air-cylinder 2. This I accomplish by forming a perforation or opening 42, extending through the rear wall or web of the die 15. A pipe 43, connected with the exhaust 105 of the valve-chest 3, of the air-cylinder is disposed to face the said opening, thus directing the exhaust from the cylinder longitudinally through the die-recess 25 and removing from the latter by the blast thus 110 caused all scale and impurities which might otherwise, if not periodically removed, interfere seriously with the successful operation of the device.

The operation and advantages of my invention will be readily understood from the foregoing description taken in connection 115 with the drawings.

By means of my improved dies the working edges of a rock-drilling tool of that kind 120 which are universally employed in connection with air-drilling machinery may be very quickly sharpened and reset without the necessity of carrying the tools to a distance or the employment of skilled labor. 125

The construction and arrangement of the parts composing the device are such that it may be practically operated in the dark, the parts of the device being so disposed with relation to each other that it will simply be impossible to present the tool for operation in 130 any but the right position.

I desire to state that while I have herein presented the preferred form of my inven-



tion, I do not limit myself with regard to the structural details thereof, but reserve the right to any changes or modifications which may be resorted to without departing from the spirit and scope of my invention or sacrificing the advantages of the same.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A device of the class described, comprising an upper and a lower die having cavities formed in their opposing faces for operating upon the tool to be shaped, said lower die having a tool-supporting ledge extending forwardly beyond the upper die.

2. In a device of the class described, a pair of die-blocks, one stationary and the other

movable, said blocks being provided in their opposing faces with recesses having V-shaped right-angled ribs therein, adjacent walls formed at right angles to the walls of said ribs, and vertical walls at the outer edges of said recesses having contacting meeting faces forming stops to limit the movement of the movable die in the direction of the stationary die.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOSEPH RETALLACK.

Witnesses:

R. A. TREVARTHEN,  
G. H. PETERSON.