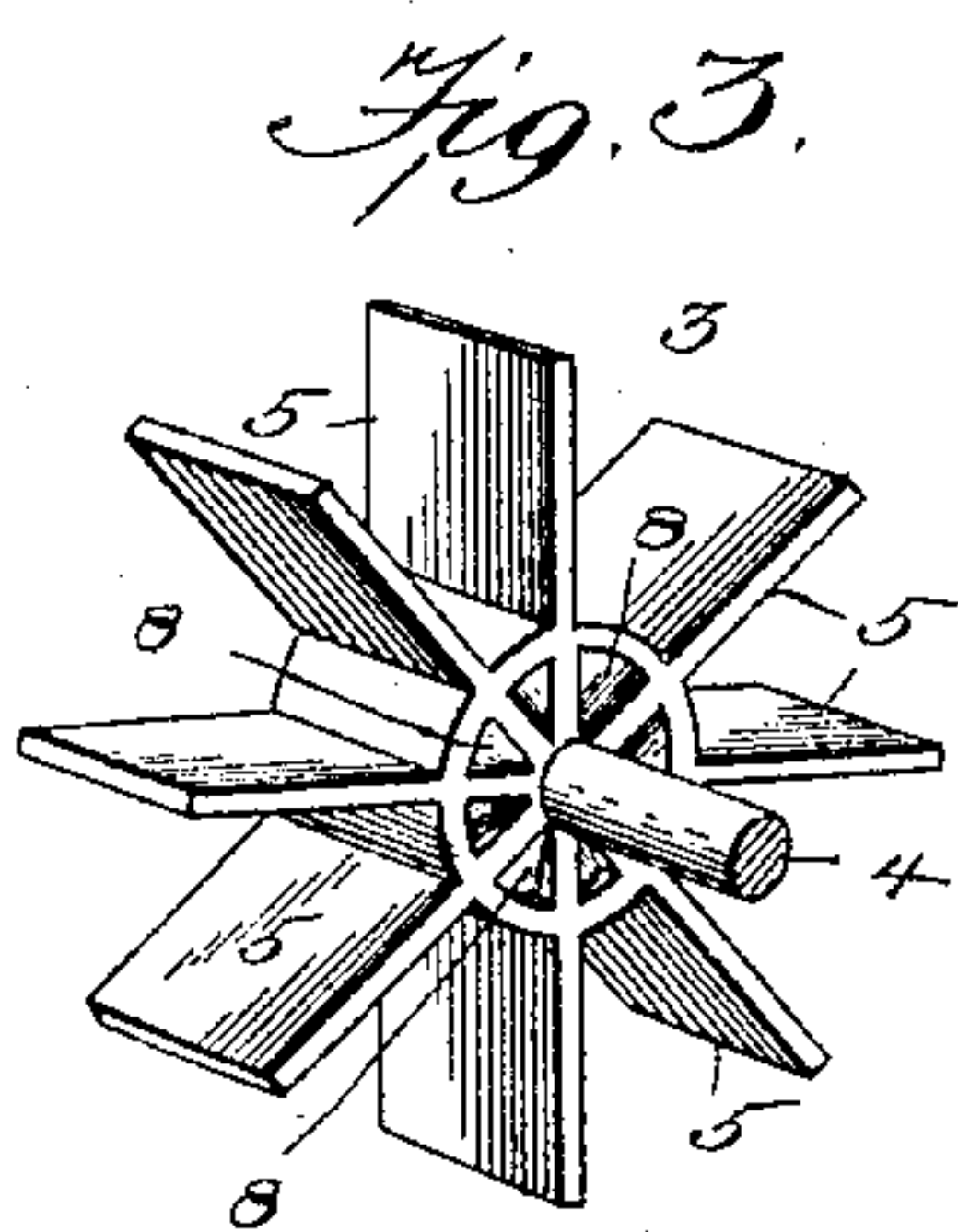
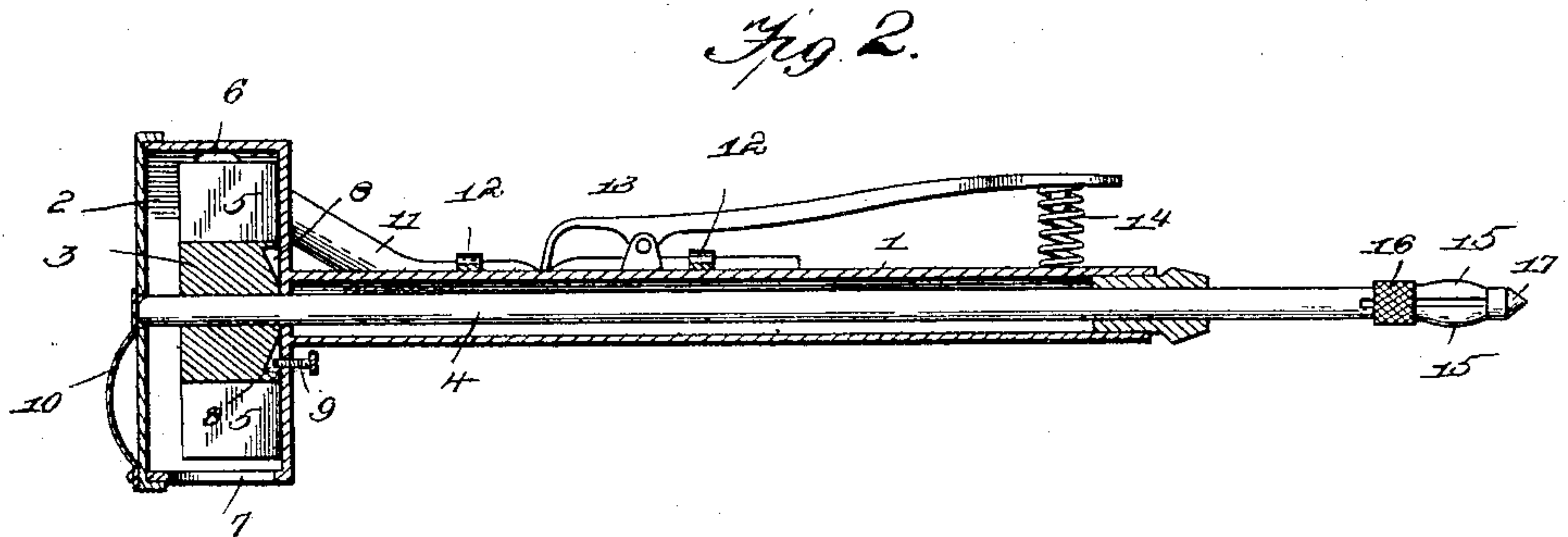
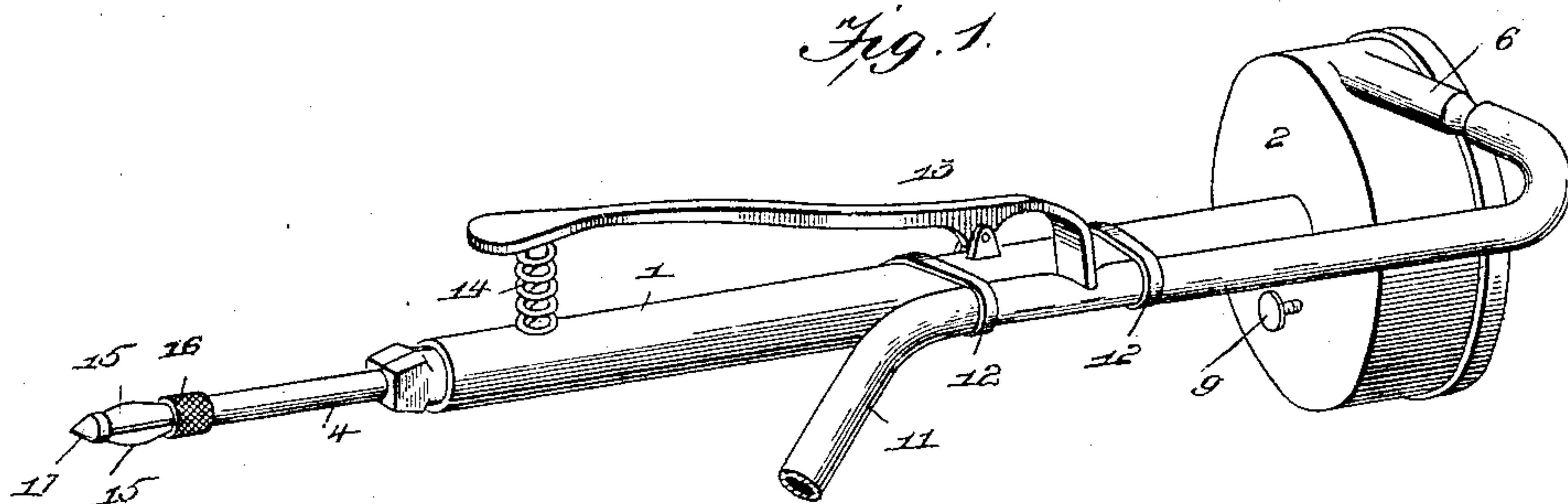


(No Model.)

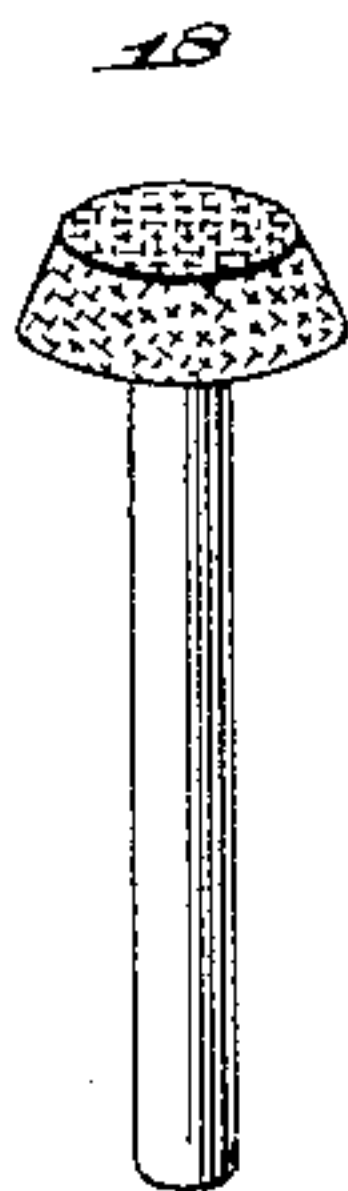
S. G. BRADFORD.  
PHOTOGRAPHIC RETOUCHER.

No. 571,642.

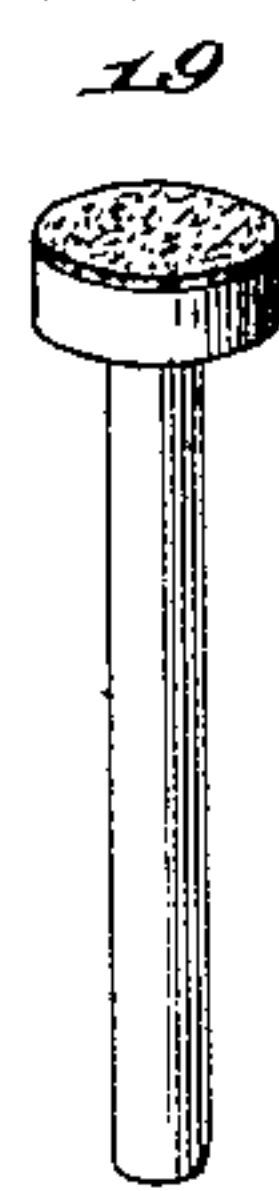
Patented Nov. 17, 1896.



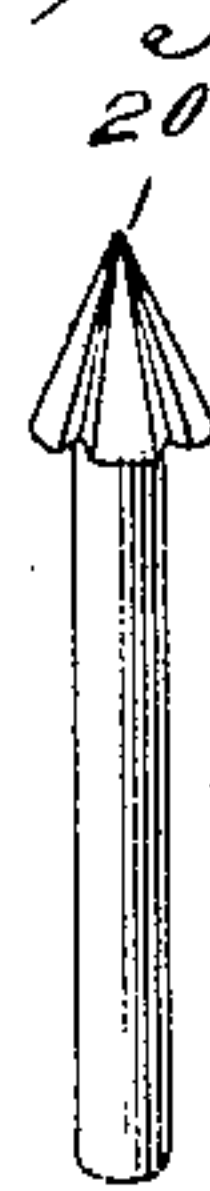
*Fig. 4.*



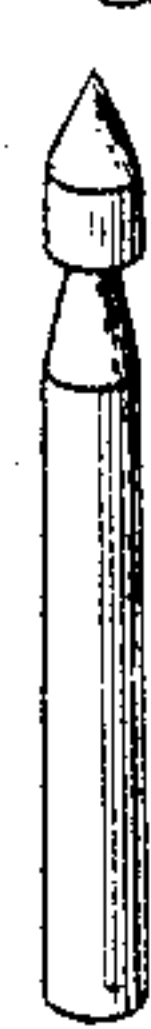
*Fig. 5.*



*Fig. 6.*



*Fig. 7.*



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# UNITED STATES PATENT OFFICE.

SAMUEL G. BRADFORD, OF BENTON HARBOR, MICHIGAN.

## PHOTOGRAPHIC RETOUCHER.

SPECIFICATION forming part of Letters Patent No. 571,642, dated November 17, 1896.

Application filed May 21, 1895. Serial No. 550,114. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL G. BRADFORD, a citizen of the United States, residing at Benton Harbor, in the county of Berrien and State of Michigan, have invented a new and useful Photographic Retouching-Tool, of which the following is a specification.

This invention relates to an improvement in photographic retouching-tools.

10 The object of the present invention is to provide a simple and efficient device for retouching a photographic negative for the purpose of removing any objectionable high light, said tool to be used either for the purpose of  
15 grinding the negative or for stippling the gelatin film.

A further object of the invention is to provide means for automatically throwing the device out of operation when required.

20 To accomplish the objects above mentioned, the invention consists in certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and finally embodied in the claim.

In the accompanying drawings, Figure 1 is a perspective view of a retouching-tool constructed in accordance with this invention. Fig. 2 is a longitudinal section through the  
30 same. Fig. 3 is a perspective view of the actuating-wheel. Figs. 4, 5, 6, and 7 show different forms of grinding and stippling instruments adapted to be applied to the shaft of the tool.

35 Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Referring to the drawings, 1 designates the handle of the device, which is in the form of a  
40 hollow sleeve or tube, upon one end of which is secured an annular hollow case or housing 2, in which is mounted a wheel 3, keyed to one end of a shaft 4, extending through the tubular handle 1 and beyond the end thereof, as  
45 shown. The wheel 3 is provided with a series of thin wide blades 5, extending from the hub thereof radially and reaching nearly to the internal periphery of the case or housing in which said wheel is mounted. The wheel 3  
50 is thus adapted to be propelled by a current of air, which is admitted through a perforated nozzle 6, connected with the periphery of the

case or housing 2 and arranged tangentially thereto.

7 indicates an outlet passage or aperture 55 arranged at the opposite side of the case or housing 2, through which said current of air finds vent.

The inner face of the wheel 3 is provided with a series of inclined notches 8, arranged in a  
60 circle around the central shaft 4, said notches being adapted as the wheel is revolved to co-operate with the inwardly-projecting point of a set-screw 9 for the purpose of imparting a rapid reciprocating movement to the shaft 4. 65  
The set-screw 9 passes through the wall of the case or housing 2, adjacent to the inner face of the wheel 3, and by adjusting said set-screw the distance which said shaft reciprocates may be regulated at will. The  
70 rear end of the shaft 4 projects through a central perforation in the rear wall of the housing, and a leaf-spring 10, secured to said rear wall at one end, presses with its free end  
75 against said shaft for throwing the same forward after it has been acted upon by each inclined notch on the inner face of the actuating-wheel.

A rubber tube 11 is attached at one end to the air-inlet nozzle 6 referred to, whence it  
80 passes through suitable eyes or loops 12, attached to the handle of the device, as shown, after which said tube extends to and connects with a suitable reservoir or air-pump operated by foot-power, thus adapting the  
85 shaft 2 to be driven by compressed air.

13 indicates an automatic cut-off, which is in the form of a lever, pivoted intermediate its ends to the tool-handle, as shown, one end of said lever being adapted to rest in forcible  
90 engagement with the flexible air-tube 11 and the opposite end of said lever being supported by means of a spiral spring 14, interposed between the same and the handle of the device. The tension of the spring 14 is sufficient to  
95 press the opposite end of said lever into engagement with the flexible air-tube 11 to such an extent as to compress the latter and close the air-passage therein, thereby normally  
100 preventing the passage of the air to the actuating-wheel. When it is desired to admit air to said wheel for driving the shaft 4, the cut-off lever may be operated by the index or other finger of the operator's hand as he uses



the instrument. Should the operator desire to stop the shaft 2, he simply releases the cut-off lever, when the latter will automatically pinch and close the air-tube.

5 The advance end of the operating-shaft is made hollow and split to form opposing spring-jaws 15, between which any one of a series of grinding or stippling tools may be inserted. When so inserted, said tools are held against  
10 displacement by means of a sliding collar or sleeve 16, forming in effect a small chuck adapted to grasp and hold said tools or instruments.

17 indicates one of the instruments, which  
15 is shown applied to the reciprocating shaft and is in the form of a shouldered steel point, particularly adapted for the removal of any high light in a negative, such as the small specks in the shadows, said instrument being  
20 adapted to be used in connection with a reciprocating shaft. This instrument is shown in detail in Fig. 7.

18 represents an instrument for partially or wholly removing any objectionable high  
25 light in a negative, this instrument being preferably made of brass or other metal and covered with leather or silk or any other suitable fabric, said instrument being in the form of a disk having a tapered edge and being  
30 adapted to be used in connection with a revolving shaft, to which condition the shaft 2 may be adjusted by removing the set-screw 9 or withdrawing it sufficiently to throw it out of engagement with the notches in the  
35 actuating-wheel. The disk of the instrument 18 may also be composed of emery and left uncovered, if desired. This instrument is shown in detail in Fig. 4.

19 designates an instrument for grinding a  
40 photographic negative for the purpose of forming a "tooth" adapting the film to readily take a lead, said instrument being tipped with leather on the forward face of the end disk, as shown in Fig. 5.

45 20 is an instrument for totally removing

any high light and for blocking out negatives, said instrument comprising a conical end having a serrated operating-face or file-like surface, as shown in Fig. 6.

Other instruments may be employed in  
50 connection with the retouching-tool above described.

By the construction above described it will be apparent that the retouching-tool contemplated in this invention may be adjusted so  
55 that the actuating-shaft will simply revolve for the purpose of grinding a negative or reciprocate for stippling the film.

The device is very simple in construction, not liable to get out of order, and will be  
60 found very convenient and efficient in practice. It will be apparent that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of  
65 the advantages of this invention.

Having thus fully described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

In a photographic retouching-tool, a tubu-  
70 lar handle, and a cylindrical case or housing carried thereby, in combination with an operating-shaft, a wind-motor wheel fast upon said shaft and arranged within said cylindrical case or housing, a nozzle connected  
75 with said case or housing, a flexible air-tube connected therewith, eyes or loops attached to the handle and embracing said flexible air-tube, and an automatic spring-actuated cut-off for pinching said flexible air-tube and  
80 closing the air-passage therein, substantially as and for the purpose specified.

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

SAMUEL G. BRADFORD.

Witnesses:

A. PLUMMER,  
GEO. W. BRIDGMAN.