

No. 690,116.

Patented Dec. 31, 1901.

E. C. MULLER.

TOOL FOR CLEANING, LIGHTENING, OR RULING HALF TONE OR OTHER
PRINTING PLATES.

(Application filed July 3, 1901.)

(No Model.)

2 Sheets—Sheet 1.

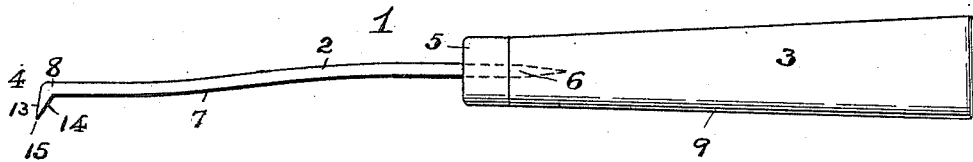


FIG. 1

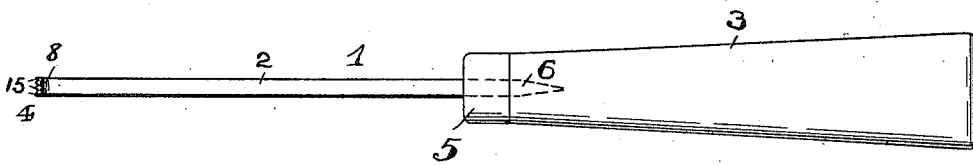


FIG. 2

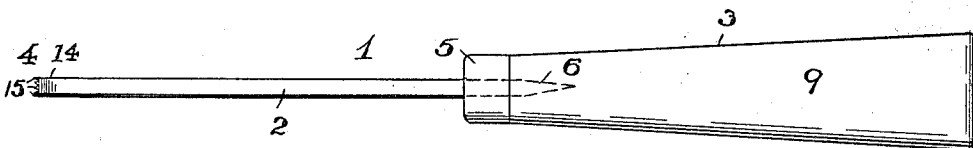


FIG. 3

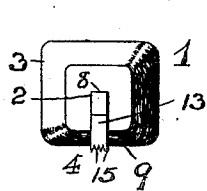


FIG. 4

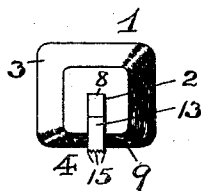


FIG. 5

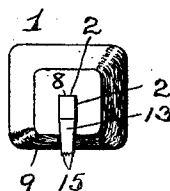


FIG. 6

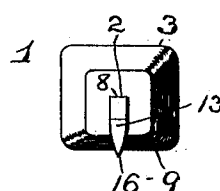


FIG. 7

WITNESSES:

Geo. S. Richards
E. Van Noy

INVENTOR:

EDWARD C. MULLER,

BY
Fred C. Fraentzel
ATTORNEY

No. 690,116.

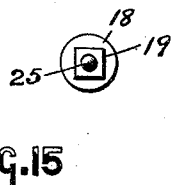
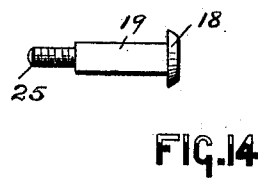
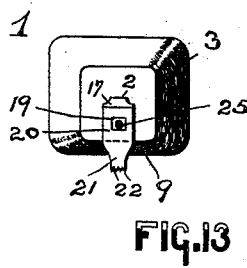
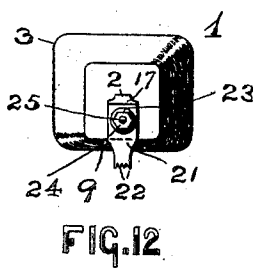
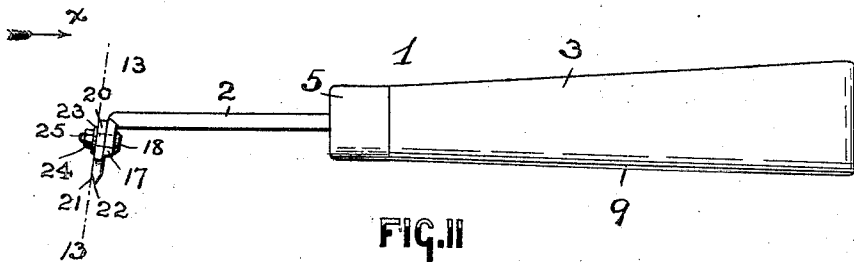
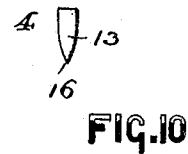
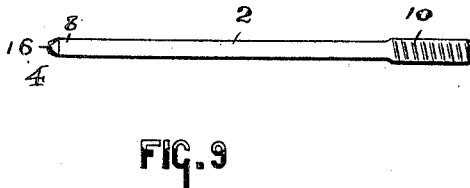
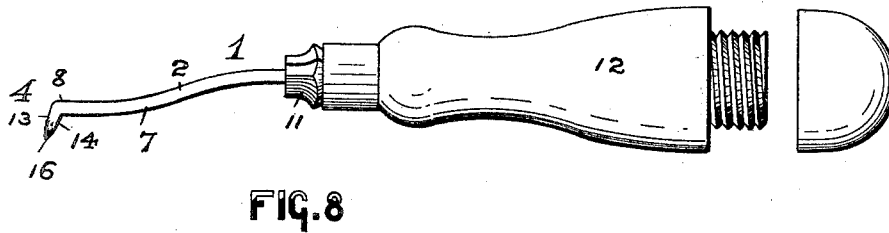
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E. Van Ness.

INVENTOR:
EDWARD C. MULLER,

BY
Fred C. Fraentzel,
ATTORNEY

UNITED STATES PATENT OFFICE.

EDWARD C. MULLER, OF VAILSBURG, NEW JERSEY.

TOOL FOR CLEANING, LIGHTENING, OR RULING HALF-TONE OR OTHER PRINTING-PLATES.

SPECIFICATION forming part of Letters Patent No. 690,116, dated December 31, 1901.

Application filed July 3, 1901. Serial No. 66,959. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. MULLER, a citizen of the United States, residing at Vailsburg, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Tools for Cleaning, Lightening, or Ruling Half-Tone or other Printing-Plates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

This invention relates generally to a novel construction of tool to be used in the art relating to the manufacture of half-tone printing-plates, electroplates, etched copper plates, and, in fact, any plates used in the art of printing.

The principal object of this invention is to provide a novel form of tool which is especially adapted for the cleaning or lightening of such plates hereinabove mentioned, the construction of the tool being to provide a rigid tool which is drawn toward the operator in the manner of a scraping-tool instead of forcing or pushing the tool away in the manner of an engraving-tool, as is now the custom in this class of work. Heretofore the printer had to employ a skilled engraver to clean out the rulings and to lighten or cut down high surfaces wherever there is an excessive impression in the plate in order that a perfect picture may be printed from the plate. In the art of using a tool for the above purposes in the manner of an engraver's tool, as is now the custom, the greatest skill and care are required when thus pushing the tool, for it often happens, even with the skilled workmanship employed, that the cuts and the depths of the rulings are unavoidably made too deep, whereby an unsatisfactory print from the plate is the result, as will be clearly understood.

The main purpose of my present invention, therefore, is to provide a tool which is drawn toward the workman like a scraper, which can be readily employed for lightening a printing-plate in the desired places, the tool also being admirably adapted for cleaning or scrap-

ing the lines or ruling of half-tone plates or for cleaning the shallow lines or netting in etched copper plates and electros.

Electroplates for printing are usually made of lead and antimony with a very thin shell of copper plate. In cleaning or toning down or in ruling such thin copper plate great care has to be exercised in order not to cut through the copper when using an engraving-tool, which has to be pushed or forced in a direction away from the workman. This process is quite tedious and slow and adds greatly to the cost of the production of the printing-plate; but by the use of my novel form and construction of scraping-tool, to be presently more particularly described, the entire surface of a printing-plate or any portion of the same can be properly and quickly cleaned or lightened, as may be desired, and a netting or screen or parallel lines can be easily ruled in the surface or face of the plate, and all lines produced will be parallel.

In the forms of tools hereinafter described, where a multiplicity of teeth are employed, the sizes of the teeth are made to correspond to the various sizes and kinds of screen usually employed in the art of producing printing-plates of the various kinds.

With these several ends in view this invention consists in the novel construction of tool to be fully described in the following specification and then finally embodied in the clauses of the claim, which form a part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a tool made according to the principles of my invention. Fig. 2 is a top view of the same, and Fig. 3 is a bottom view of the tool. Figs. 4, 5, 6, and 7 are front end views of a tool for the purposes of my invention, the said views showing the shank of the tool provided with variously-formed and variously-arranged scraper-teeth, but all still embodying the elements of this invention. Fig. 8 is a side view of a tool made according to my invention, but the shank of the tool being capable of a detachable connection with the handle. Fig. 9 is a top view of the said shank and its scraper-tooth detached from the handle, and Fig. 10 is a front end view of the said shank and its

scraping-tooth. Fig. 11 is a side view of a modified construction of tool made according to the principles of my present invention, but in which the shank and scraping tooth or teeth member is detachably connected with said shank, whereby different members provided with variously-formed and variously-spaced scraping-teeth can be interchangeably secured to one shank. Fig. 12 is a front end view of this form of tool. Fig. 13 is a vertical section taken on line 13 13 in Fig. 11 looking in the direction of the arrow X. Fig. 14 is a side view of a fastening-bolt employed with the parts represented in Figs. 11, 12, and 13 on an enlarged scale; and Fig. 15 is an end view of said bolt and a nut thereon.

Similar numbers of reference are employed in connection with all of the said above-described views to indicate corresponding parts.

Referring to the said drawings, 1 indicates the complete tool which is to be used for the purposes hereinabove stated. This tool, as will be seen from an inspection of the several figures, comprises a shank or stem 2, which is attached or secured in the end of any suitably-constructed handle, as 3, and the said shank 2 being formed or provided with a member 4, which is to be employed in the manner of a scraper for either purposes of cleaning or lightening half-tone, electro, or any other forms of printing-plates.

In Figs. 1 to 4, inclusive, I have represented one form of tool made according to my invention. In this tool the handle 3 is preferably made as shown, having a ferruled end 5, into which the pointed end 6 of the shank 2 is driven and permanently fixed. The said shank 2 of the tool is preferably a piece of steel, and it is bent, as at 7 in Fig. 1, so as to bring the free end portion 8 of the shank practically in alinement with the lower and flat surface 9 of the handle 3, substantially as illustrated and for the purposes to be hereinafter more fully set forth. The said shank 2 of the tool 1, as will be seen from an inspection of Figs. 8 and 9, may, however, be provided with a serrated end 10, which can be inserted or arranged between the holding-jaws of a vise-like member 11 of the handle 12, (shown in said Fig. 8,) whereby the shank can be securely connected to the handle, but can be quickly and easily detached from the vise-like member 11 for the application to said handle of another shank 2, provided with a different set of scraping-teeth. The shank 2 in the arrangement of the parts represented in said Figs. 8 and 9 is also preferably bent in a curved form, so as to bring the free end portion 8 of the shank 2 practically in alinement with the lowest portion of the handle 12. Extending downwardly from the free end portion 8 of the shank is the member 4, previously mentioned, the said member being formed by two angular and forwardly-extending surfaces 13 and 14, as clearly represented in the several figures of the drawings, and more especially in Figs. 1 and 8 thereof.

These two forwardly-extending surfaces 13 and 14 thus provide a slightly forwardly inclining chisel-shaped member, the lower edge of which where the two angular surfaces 13 and 14 meet being ground and sharpened and provided with one or more scraping or ruling teeth 15, as illustrated, the number, shapes, and sizes of these teeth varying according to the work for which they are intended and according to the size and kind of screen or netting or the kind of ruling on a printing-plate which it is intended to clean, scrape, or lighten. The principal purpose of providing the handle 3 with a flat under surface 9 and also that of providing the shank 2 with a reverse curve, as represented in Figs. 1 and 8, is that the workman while in the act of drawing the scraping member over the surface of a printing-plate may be able to hold the tool as closely to the face of the plate as possible without the least danger of damaging the printing-surface of the plate by accidentally bringing any portion of the handle or the fingers of the hand in scraping contact with the printing-surface of the said plate. As clearly illustrated in Figs. 4, 5, and 6 of the drawings, the said member 4, hereinabove mentioned, is provided in the chisel-shaped edge formed by the two forwardly-extending angular surfaces 13 and 14 with the variously-formed and variously-numbered teeth 15, as has been previously mentioned; but, if desired, the said portions 13 and 14 may be made tapering, as represented in Figs. 7 and 10, in which case the member 4 is formed with one properly-pointed tooth 16, as shown.

In Figs. 12 to 15, inclusive, I have represented the shank 2 of my novel tool 1 provided with a downwardly and slightly forwardly inclining member 17, which is provided, preferably, with a square or rectangular hole in which is inserted the correspondingly-formed shank 19 of a small bolt 18. The angularly-shaped shank of said bolt 18 is made to extend from the opening in said member 17; so that there may be arranged thereon against turning, as represented more especially in Fig. 13, a plate 20, which is provided with a chisel-shaped edge 21, in which there may be any number of scraping or ruling teeth 22, either one or more teeth, as hereinabove set forth. The plate 20 is removably held upon the angularly-shaped shank portion of the bolt 18, which extends from the face of the member 17 of the shank 2, by means of a washer 23 and a nut 24, screwed upon a screw portion 25 of said bolt 18, all of which will be clearly understood from an inspection of the said Figs. 11 to 15, inclusive. Thus it will be seen that a tool is provided for the purposes of my present invention in which a single shank 2 is employed, to which can be quickly and readily secured plates 20, provided with one or more teeth or with variously-formed teeth, according to the work to which the tool is to be put either in cleaning or lightening half-tone

plates, electroplates, or any other printing-plates.

From the above description of my invention it will be evident that I have devised a simply-constructed and cheaply-made tool by the use of which the dangers heretofore existing of ruining printing-plates by the old method of using the tools for the purposes of cleaning or lightening printing-plates is reduced to a minimum, if not entirely obliterated.

It will be understood that various changes may be made in the arrangements and combinations of the parts of the tool, as well as in the details of the construction thereof, without departing from the scope of my invention. Hence I do not limit my invention to the exact arrangements and combinations of the parts as herein described and as illustrated in the accompanying drawings, nor do I confine myself to the exact details of the construction of any of the said parts.

Having thus described my invention, what I claim is—

1. A tool for cleaning, or lightening, the impression-surfaces of half-tone, electro, and other similar printing-plates, comprising, a shank and a handle to which said shank is attached, said shank being provided at its free end with a downwardly-extending and rigid drawing member, and a tooth or teeth on said member, the said member being formed with tapering portions 13 and 14 meeting at their lower ends, and said drawing member being arranged at an acute angle to the plane of the lower surface of the shank of the tool and extending in a slightly-forward direction from the free end of said shank, substantially as and for the purposes set forth.

2. A tool for cleaning, or lightening, the impression-surfaces of half-tone, electro, and other similar printing-plates, comprising, a

shank and a handle to which said shank is attached, said shank being formed with a bent portion so as to bring its free end in alinement with the lowest part of the handle, or approximately so, and said shank being provided at said free end with a downwardly-extending and rigid drawing member, the said member being formed with tapering portions 13 and 14 meeting at their lower ends, and said drawing member being arranged at an acute angle to the plane of the lower surface of the shank of the tool and extending in a slightly-forward direction from the free end of said shank, and a tooth or teeth on said member, substantially as and for the purposes set forth.

3. A tool for cleaning, or lightening, the impression-surfaces of half-tone, electro, and other similar printing-plates, comprising, a shank and a handle to which said shank is attached, said shank being formed with a bent portion so as to bring its free end in alinement with the lowest part of the handle, or approximately so, and said shank being provided at its free end with a downwardly and forwardly extending and rigid drawing member, the said member being formed with tapering portions 13 and 14 meeting at their lower ends, and said drawing member being arranged at an acute angle to the plane of the lower surface of the shank of the tool and extending in a slightly-forward direction from the free end of said shank, and a tooth or teeth on said member, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 1st day of July, 1901.

EDWARD C. MULLER.

Witnesses:

FREDK. C. FRAENTZEL,
GEO. D. RICHARDS.