

H. B. FOWLER.
COMBINATION INSTRUMENT.
APPLICATION FILED JUNE 1, 1918.

1,302,783.

Patented May 6, 1919.
2 SHEETS—SHEET 1.

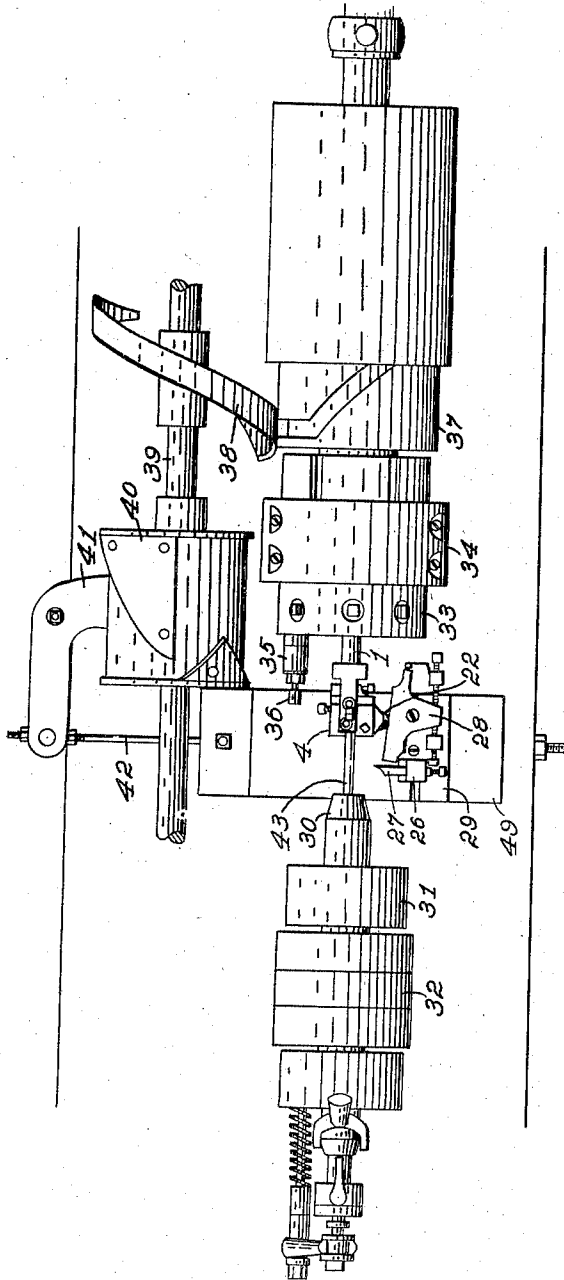


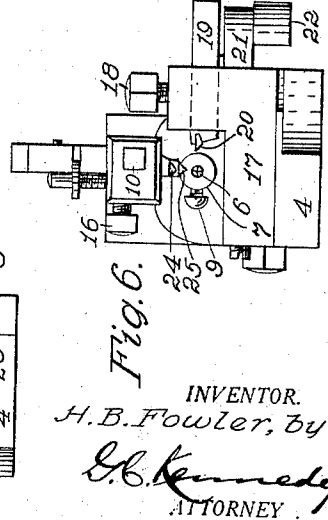
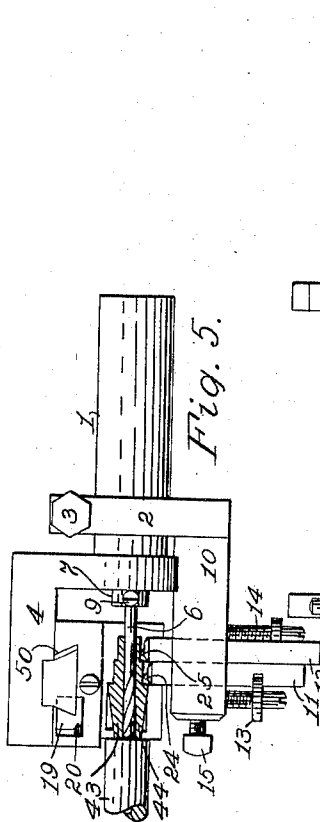
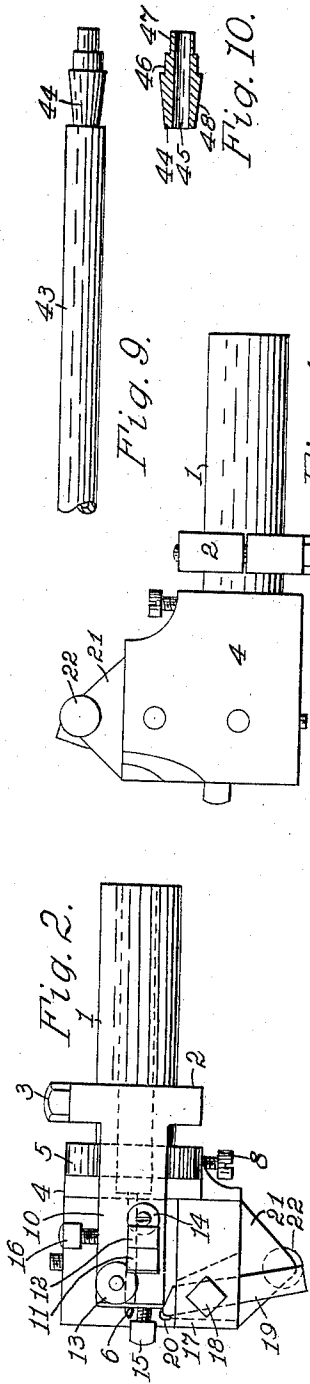
Fig. 1.

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UNITED STATES PATENT OFFICE.

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COMBINATION INSTRUMENT.

1,302,783.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HAROLD B. FOWLER, a citizen of the United States of America, and a resident of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Combination Instruments, of which the following is a specification.

My invention relates to improvements in combination instruments, and particularly to instrumental means for shaping bodies by the coöperative action of a plurality of tools operating simultaneously, and the object of my improvement is to combine a special plurality of tools with suitable propelling and operating-means adapted to actuate them in the operation of forming special parts as of fountain-pen bodies, in a simultaneous coaction.

This object I have accomplished by the means and mechanism which is hereinafter described and claimed, and which is illustrated in the accompanying drawings, in which Figure 1 is a top plan view of said instrumental means operatively mounted in coacting mechanism for simultaneously actuating them; Figs. 2 to 5 inclusive are enlarged elevations of the four sides of the combination instrument proper; Figs. 6 and 7 are enlarged elevations of the opposite ends of said instrument, and Fig. 8 is an end elevation of said instrument and of parts of the coacting movable abutment for actuating the slidable tool-holder, while Figs. 9 and 10 are respectively elevations of a portion of the body operated on with one end shaped by said instrument before cutting off, and of the part so shaped after cutting off.

Similar numerals of reference denote corresponding parts throughout the several views.

Referring to said Fig. 1, there is therein shown a machine equipped with operating-means for actuating my improved combination instrument in the shaping of orificed end-plugs 44 for a fountain-pen barrel, or other like parts. In this machine a belt-wheel 32 rotates a shaft and a spring-clutch chuck or holder 30 for a tubular hard-rubber blank 43, from which my instrument forms said orificed end-plugs and then other means cuts them off. The said spring-clutch chuck is not described in construction nor

action as both are well-known, and are adapted to advance the blank tube step by step in the progress of the work, as the shaped parts are cut off.

A turret 33 is mounted both rotatably and longitudinally slidably in a bearing-box 34 and is slidably non-rotatably mounted on a driven shaft carrying a cam-wheel 37 whose cam-groove receives a stud from a cam 38 on a rotatable driving cam-shaft 39, being fixedly connected to said cam-wheel which is also slidably non-rotatably mounted on the same shaft. In the end-face of said turret are a plurality of sockets to receive tools, such as a stem 35 having a tamping-head 36, and a stem 1 which has my improved combination of tools mounted thereon, said stems being removable from said sockets, but held therein by set-screws. Located on the bed of the machine between and under the said chuck and turret is a transversely movable base-plate 49 having thereon a block 29 provided with a cross-groove on which a frame is slidably adjustably mounted carrying a shearing-tool holder 26 with a shearing-tool 27 removably held therein, and also carrying a pivoted abutment-block 28 having one face inclined relative to the stem 1 and the tools thereon, the inclination of said abutment-block being adjustable by means of set-screws.

A fixed rod 42 on one end of the base-plate 49 is adjustably pivotally connected to one extremity of a bell-crank lever 41, the latter medially pivoted to the machine-frame, and having its other extremity contacting with cam-sections on a cam-wheel also mounted on said shaft 39, the said cam-wheel operating said lever to reciprocate the base-plate 49 transversely of the machine-frame at suitable times during the actuation of the machine, to permit the shearing-tool 27 to approach the blank 43 to cut off a shaped part when the combination shaping instrument has performed its part of the work. Before this final stage of the work, and while the combination instrument is operating upon the blank 43, the shearing-tool holder and the abutment-block are in the positions shown in said Fig. 1.

Referring now to the detail Figs. 2 to 8 inclusive, the numeral 1 denotes an axially orificed cylindrical body, the outer end of

whose orifice receives a boring-tool holder 7, containing a removable boring-tool 6 held by means of a set-screw 9.

Slidably adjustably mounted on said stem 1 is a split-block 2, held thereon by a screw 3 compressively connecting its split parts.

The block 2 has an offset member 10 extending longitudinally relative to said stem beyond the latter and having a transverse slotted seat for a pair of adjustable turning-tools 11 and 12 placed in contact side by side longitudinally and having the diamond cutting points 24 and 25 fixed in their inner ends respectively. Adjusting-screws 13 and 14 are mounted in the member 10 and have annular flanges which enter and engage the walls of grooves in the tools 11 and 12, whereby said tools may be independently adjusted in their respective relations to the work. When so adjusted the tools are held in their adjusted positions by means of a set-screw 15 in the end of said member 10, and by means of a set-screw 16 in the side of the member.

The numeral 5 denotes a grooved body of a bifurcated nature, whose bifurcations embrace the outer end of said stem 1, and are secured thereon removably and adjustably by means of a set-screw 8. This body 5 has an offset member 4 of rectangular form provided on its inner face with a raised transverse rib, with inclined sides to receive a slide-rest or slidable tool-holder 17 transversely grooved to fit it slidably and having a transverse tool-holding slot with one inner wall inclined to permit of adjustments of a removably held turning-tool 19, the latter held in an adjusted position by means of a set-screw 18. On the inner end of said tool 19 is fixed a diamond cutting point 20 directed toward the work. Resilient means not shown mounted between the holder 17 and the member 4 act on the said holder to normally hold it in its outwardly retracted position yieldingly. This may be a spring-plate whose outer end is shown at 50 in Fig. 5, or other suitable device for the purpose.

The sliding-rest or holder 17 has a projection or angular boss 21 on which is dependently mounted an anti-friction roller 22 adapted to contact with and roll along the abutting inclined face of the adjustable abutment-block 28 at certain times during the operation of the device.

Referring to Figs. 9 and 10, these figures show a tubular blank 43 of hard rubber adapted to be operated upon by the above described instrumental means to form and separate therefrom a plurality of shaped end-plugs 44. In said operation, may be formed an end-plug centrally longitudinally orificed at 45, and having one end shaped conically outwardly at 48, while the remainder of its circumferential surface is shaped or stepped at 46 and 47 into dimin-

ished cylindrical parts shown. However, the shaped end-plug illustrated may be varied in form, by various adjustments of the turning-tools of my device, as may be desired.

Referring again to said Fig. 1, when the action of the spring-clutch of the chuck 30 has advanced the blank 43 a step, the cam-actuated turret 33 advances and causes its tamping-tool to contact with the abutting end of the blank to tamp it to a correct position to be operated upon, the turret then being partially rotated to bring the blank into alinement longitudinally and axially with the boring-tool 6. The turret is then in succession cam-actuated to approach said blank again, and as the blank is rapidly rotating the boring-tool 6 penetrates it axially forming the central bore 45, as shown in said Fig. 5. As the turret so advances the diamond cutters 24 and 25 turn the outside of the blank to form the shouldered portions 46 and 47, while simultaneously the other diamond cutter 20 is moved inwardly gradually and progressively to turn the conical outer part 48 on said blank, all these operations taking place in coaction and at the same time.

It will be noted that the action of the lever 41 as driven by the cam-wheel 40 is such as to properly synchronize the movements of the base-plate 49 so as to move it transversely across the machine to cause the shearing-tool 27 to cut off the finished end-plug 44 at the completion of the shaping operation, and then return it to its former position. These operations thus go on successively until the whole blank is used up. The abutment-block 28 thus guides the turning tool 19, the roller 22 preventing friction.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a combination instrument, a stem having holding-means for a boring-tool, a boring-tool removably mounted in said holding-means, members secured to said stem, a turning-tool removably mounted on one of said members, a slide-rest on the other member containing a sliding tool-holder, and a turning-tool mounted removably in said tool-holder, said tools being adapted to operate simultaneously upon and shape a body positioned in a certain relation thereto.

2. In a combination instrument, a stem having holding-means for a boring-tool, a boring-tool removably secured in said holding-means, members independently and adjustably mounted on said stem, a turning-tool removably adjustably mounted on one of said members, a slide-rest on the other member, a sliding tool-holder in said slide-rest, and a turning-tool removably and adjustably mounted in said tool-holder, said tools all being adapted to operate simultaneously upon a body to be formed by them.

3. In a combination instrument, a stem having holding-means for a boring-tool, a boring-tool removably secured in said holding-means, members independently and adjustably mounted on said stem, turning-tools independently adjustably mounted on one of said members, a slide-rest on one other member, a sliding tool-holder in said slide-rest, and a turning-tool removably and adjustably mounted in said sliding tool-holder. 10

Signed at Waterloo, Iowa, this 17th day of May, 1918.

HAROLD B. FOWLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."