

No. 764,550.

PATENTED JULY 12, 1904.

H. R. BORIE.
VANISHING THREAD TAP.
APPLICATION FILED JUNE 10, 1903.

NO MODEL.

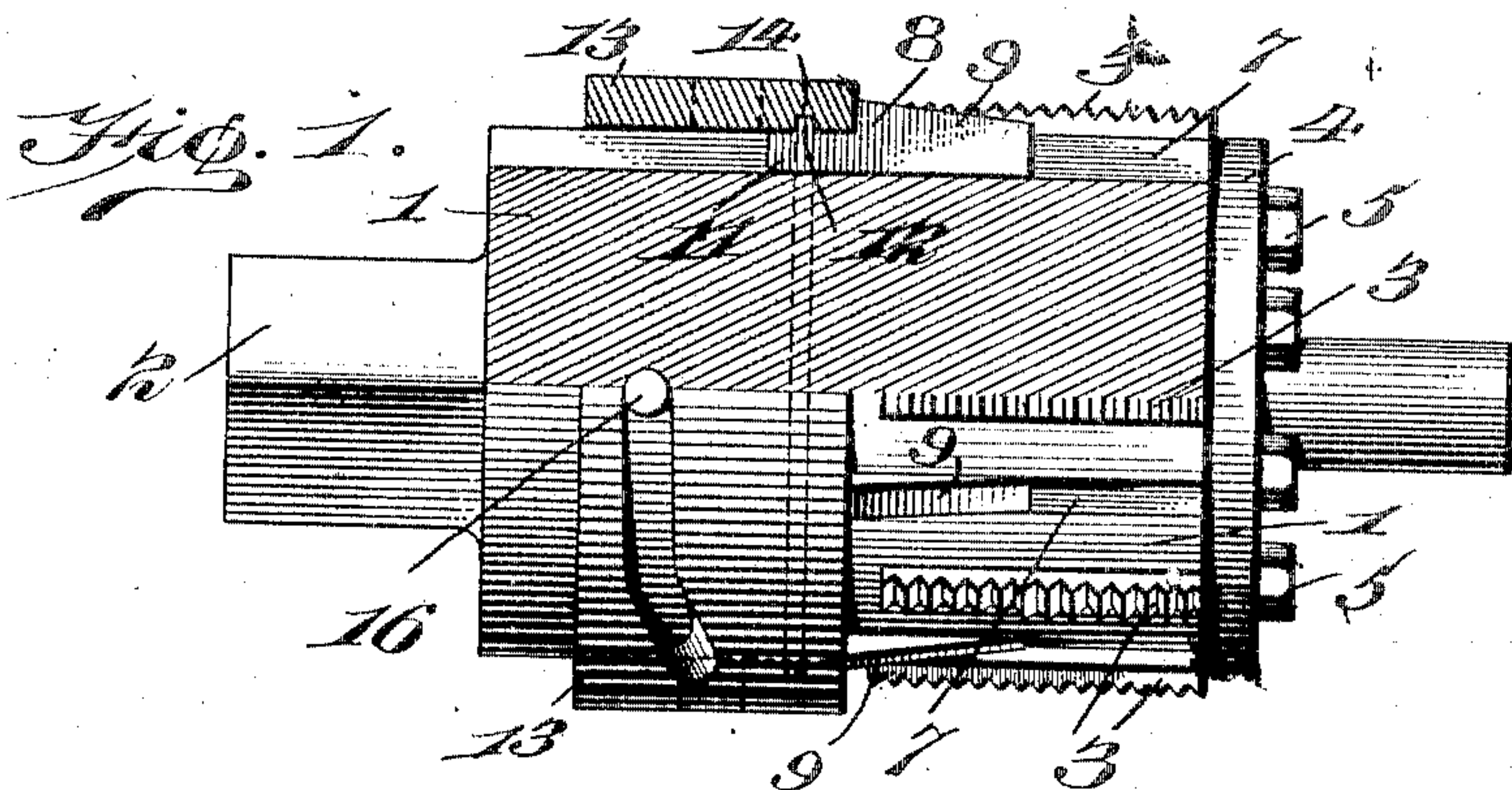
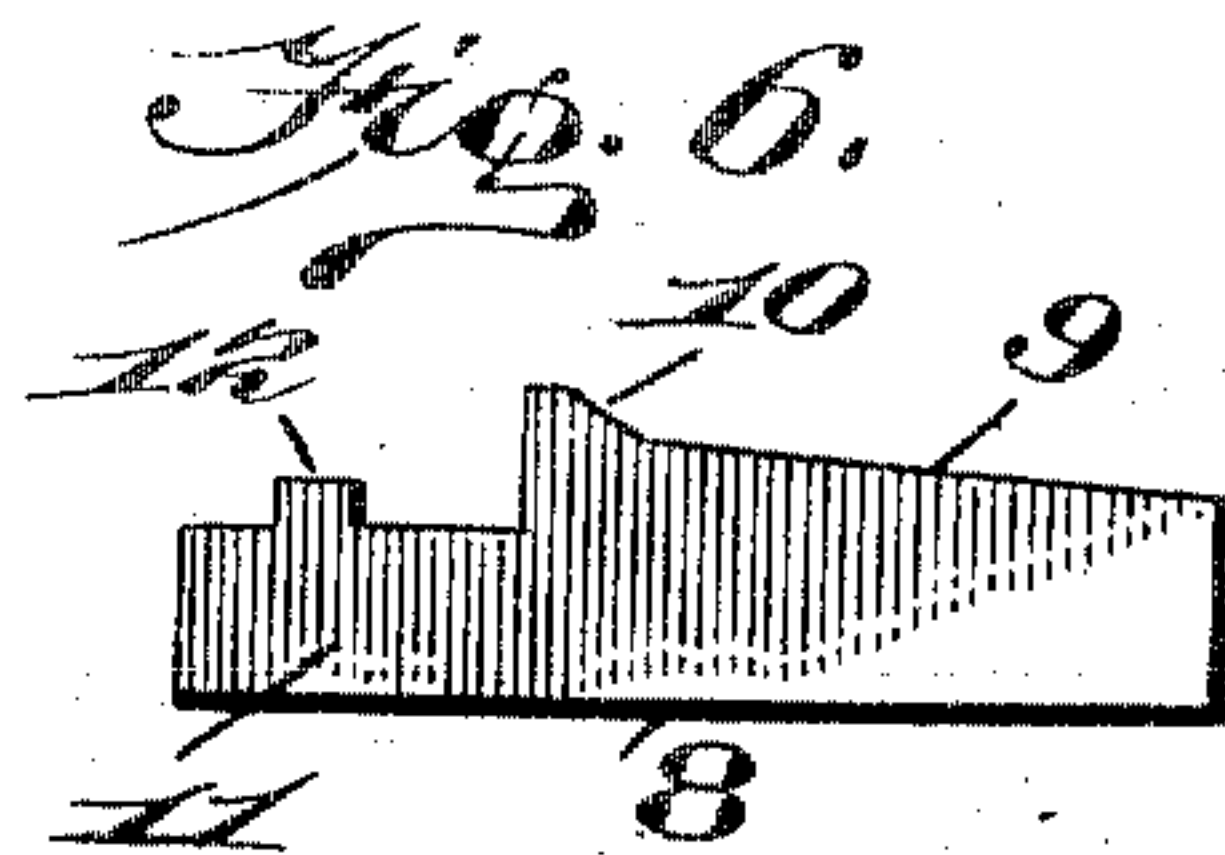
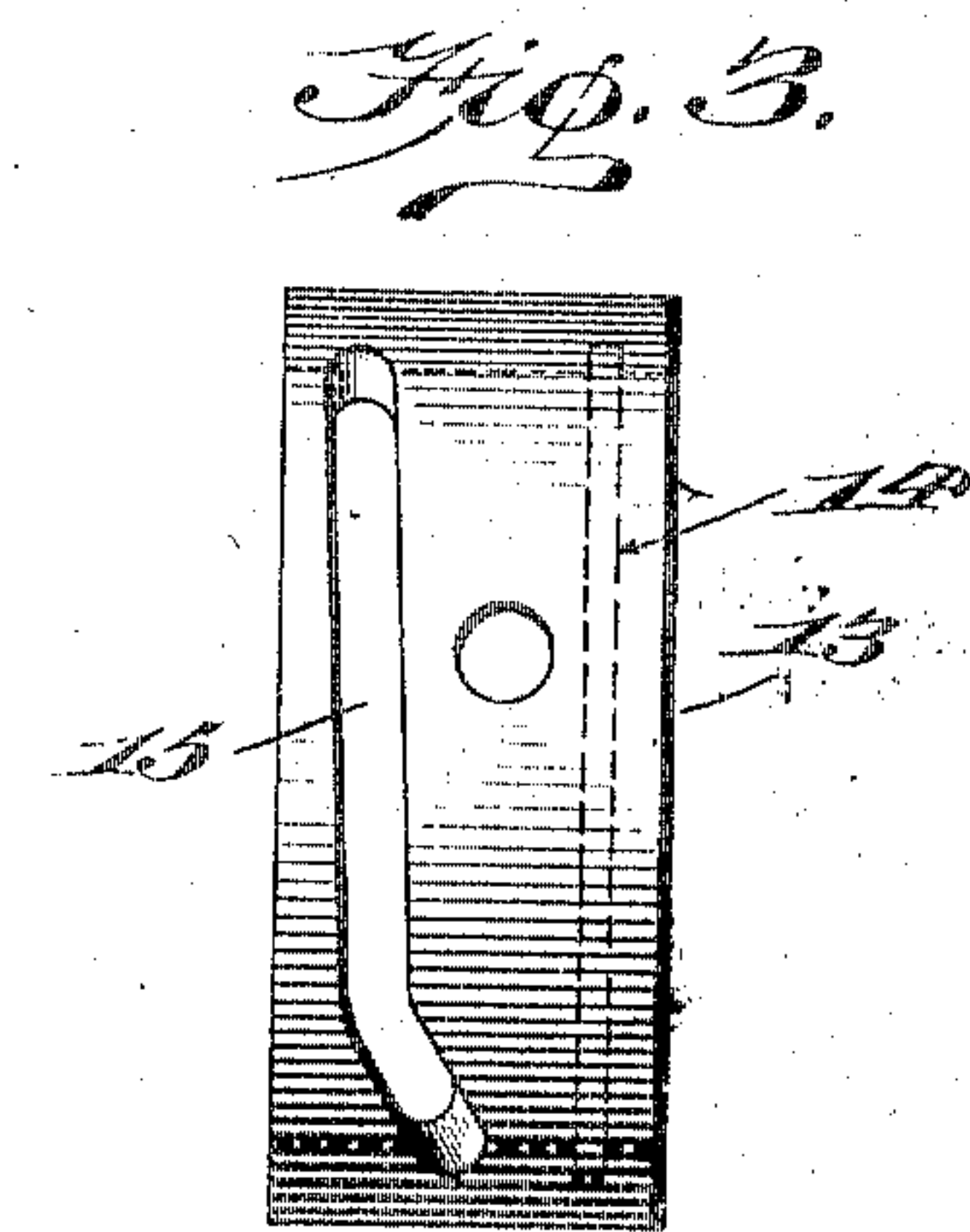
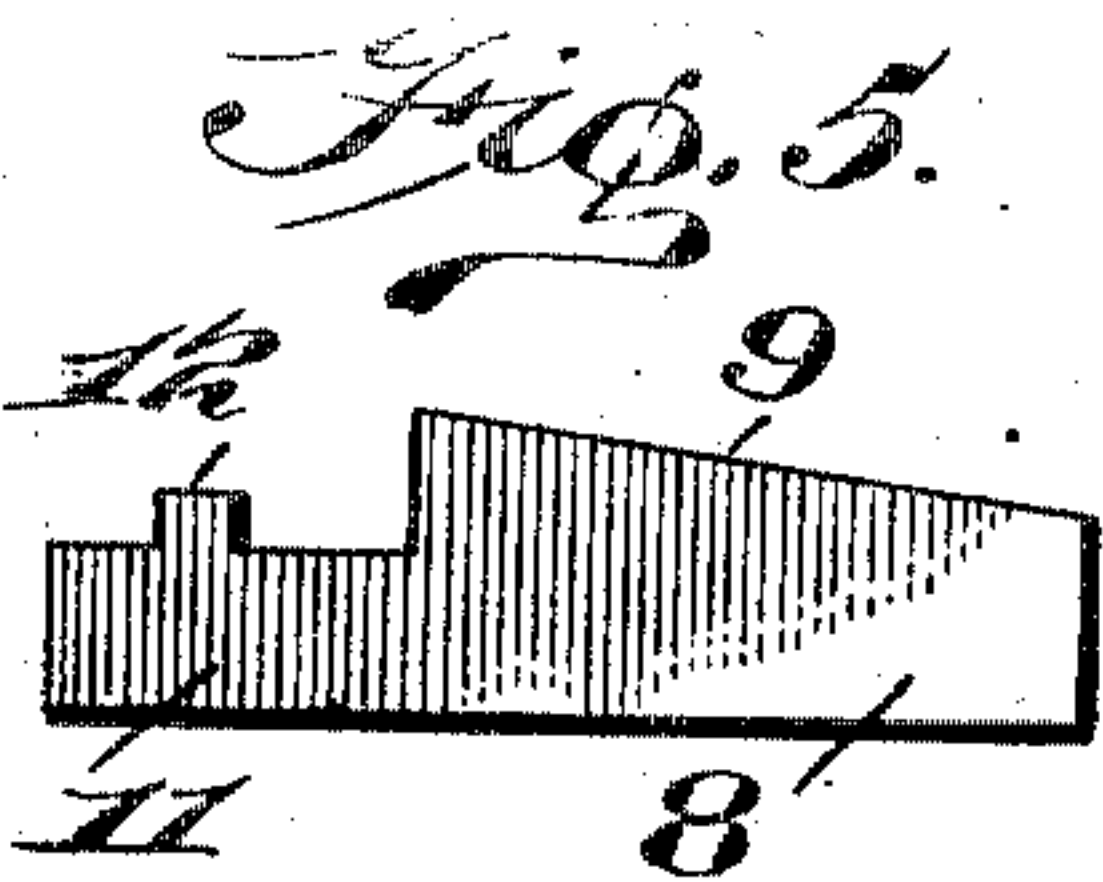
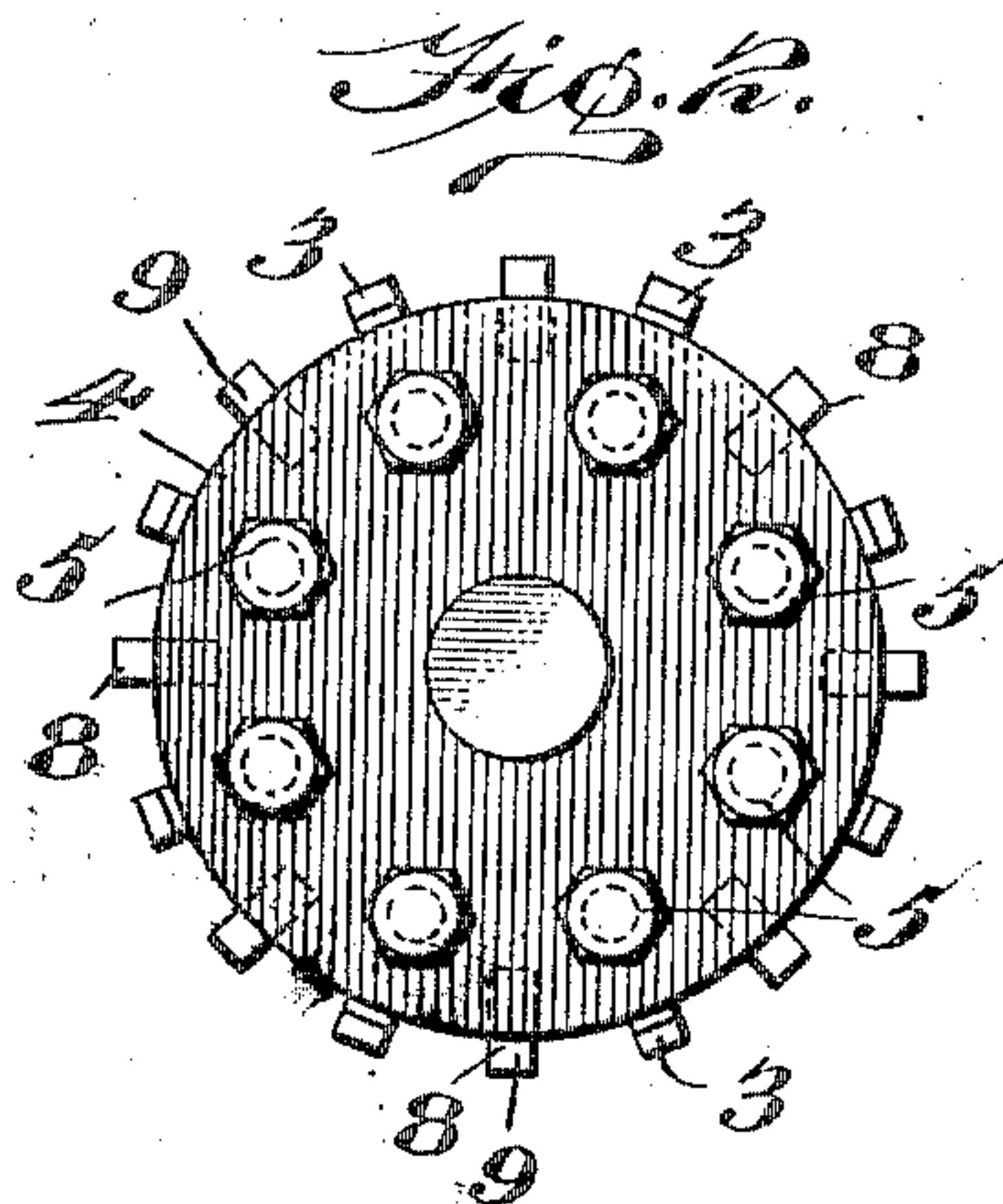


Fig. 4.



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UNITED STATES PATENT OFFICE.

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VANISHING-THREAD TAP.

SPECIFICATION forming part of Letters Patent No. 764,550, dated July 12, 1904.

Application filed June 10, 1903. Serial No. 160,904. (No model.)

To all whom it may concern:

Be it known that I, HIRAM R. BORIE, a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Vanishing-Thread Taps; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a tap and finishing-tool for tapping and finishing pipe-sockets and similar ring-shaped or tubular articles; and the object of my invention is to provide a tool which will not only form the screw-threads in the socket, but will also ream out the threads toward one end of said socket, so as to produce vanishing threads therein, and may also, if desired, finish the end of the socket.

In the manufacture of pipe-sockets it is desirable that the threads at the end be reduced in height or cut away, so that substantially a plain inner surface will be formed which will lap over and cover the threads on the pipe-section where the latter run out. It is also desirable that the ends of the socket be finished or smoothed down by removing burs, fins, and other irregularities. Heretofore in the manufacture of these sockets the threading and finishing or reaming has either been done by means of separate tools and machines, thus necessitating two handlings of the coupling, or else the reaming or finishing tools have been so mounted on the tap-body that they are incapable of movement relatively to the threading-cutters during the operation of the tool, so that in case of an excessively long coupling, in which it is necessary to drive the tap down farther, these reaming or finishing tools have cut down into the threads farther than necessary or desirable.

The object of my invention is to provide a single tool whereby both operations of threading and finishing may be performed simultaneously, said tools being so constructed that the finishing or reaming cutters can be thrown out of operation at any stage of the tapping and without stopping the tool.

To this end the tool comprises a body hav-

ing mounted therein the threading-cutters, which may be either solid with the body or radially collapsible therein, so as to permit the easy removal of the tool from the finished socket, said body also having mounted therein to the rear of the threading-cutters one or more unthreaded tools, such as reaming or facing cutters, which will ream out the threads at the ends of the socket to produce the vanishing threads or otherwise finish the end of the coupling as desired, these reaming and finishing cutters being so mounted in the body that they can be withdrawn from the socket being tapped while the threading-tools are still in operation.

In the accompanying drawings, Figure 1 is a view, partly in side elevation and partly in central longitudinal section, showing my improved tool. Fig. 2 is a front end view of the same. Fig. 3 is a side view of the cam sleeve or collar. Fig. 4 is a side view of a suitable tool for operating the same. Fig. 5 is a side view of a reaming-cutter for producing vanishing threads; and Fig. 6 is a similar view of a modified form of cutter which will not only produce vanishing threads, but also bevel the end of the socket.

My improved tapping and finishing tool comprises a body 1 of suitable size and shape, depending upon the size of coupling to be tapped, and provided at one end with the shank 2, whereby it may be attached to the machine-spindle, this tool being adapted to be either rotated or held stationary, depending upon whether the socket is held stationary or rotated.

In the forward end of the tool are mounted a series of threading or chasing cutters 3, which project radially, as shown, and have their outer faces threaded in the usual way of making cutters of this character. These threading-cutters may either be straight or tapered and may either be mounted fixedly in the body or mounted therein so as to be collapsible radially in order to permit the withdrawal of the tool from the finished socket without reversing the tool, as will be readily understood without further description. In

the drawings these cutters have been shown as mounted fixedly in the body, and they are shown as seated in radial slots cut in the body from the front end thereof and are held in position by means of a face-plate 4 and screw-bolts 5. Also formed in the body and preferably alternately with the threading-cutters 3 are radial slots 7, in which are mounted the reaming or finishing cutters 8, so that they can be taken out and changed without disturbing the threading-cutters. The finishing-cutters may be of various shapes, depending upon the particular work they are to perform. In Figs. 1 and 5 they are shown provided with straight tapered cutting-faces 9, which will act to ream out the threads at the end of the socket on a taper, thus producing vanishing threads. In Fig. 6 is shown a cutter having not only the tapered straight reaming-face 9 to produce the vanishing threads, but also the inclined cutting-face 10 to finish the end of the socket on a slight bevel. Various other forms of finishing-tools may be employed, depending upon the particular shape or finish to be given to the end of the socket. Preferably these finishing-tools will be slidably mounted in the grooves 7, so that they can be withdrawn from the socket after the desired finish has been given to the end of the latter and while the threading-cutters are still in operation. Various means for withdrawing the cutters may be employed, and in the drawings I have illustrated one arrangement for performing this function. Each of the cutters 8 is provided with a rearwardly-projecting shank 11, on which is a radially-projecting teat or projection 12. Surrounding the body 1 is a sleeve 13, which is provided on its inner face with an annular groove 14, into which the projections 12 of the cutters fit. The sleeve 13 is provided with a cam-slot 15, and projecting through said slot and tapped into the body 1 is a pin 16, so that by merely rotating the sleeve on the body this pin will ride in the cam-slot 15 and cause the sleeve to move lengthwise of the body, thus projecting or withdrawing the finishing-cutters 8, depending upon the direction of rotation of the sleeve. This sleeve may be rotated by hand; but preferably I employ a spanner-wrench, such as shown in Fig. 4, having the handle 18 and curved portion 19 to embrace the sleeve and having on its end a tooth or projection 20, which will catch into the cam-slot 15 or other suitable opening in the sleeve.

In use the tool described may be either rotated and the socket to be finished held stationary or else the socket can be rotated and the tool held stationary. In the operation of the tool the threading-cutters 3 cut the threads in the socket in the usual way, the tool being fed forward either by the action of the

threading-cutters themselves or by other suitable mechanism, as is well understood. The sleeve 13 will have been turned so as to project the finishing-cutters 8 forwardly, and when the tool has entered a certain distance into the socket these finishing-cutters will come into action and will ream out the threads at the end of the socket, so as to produce tapers and otherwise finish the end of the socket, depending upon the shape of said cutters. When this shaping or reaming has progressed to the desired distance, the sleeve 13 will be rotated so as to withdraw the finishing-cutters out of contact with the socket. This can be done without arresting the action of the threading-cutters, and the latter will continue in operation until the thread has been finished.

The tool is simple in construction, cannot get out of order, and is efficient in operation.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A threading and finishing tool comprising a body, one or more threading-cutters mounted therein, one or more unthreaded finishing-cutters also mounted in the body to the rear of the threading-cutters, and means for throwing said finishing-cutters out of operation while the tool is in operation.

2. A threading and finishing tool comprising a body, one or more threading-cutters mounted therein, and one or more unthreaded or finishing cutters mounted in the body to the rear of the threading-cutters so as to be longitudinally movable therein, and means for moving said cutters longitudinally while the tool is in operation.

3. A threading and finishing tool comprising a body, one or more threading-cutters mounted therein, one or more unthreaded or finishing cutters mounted in radial slots in said body to the rear of the threading-cutters, and a cam-ring arranged to engage said finishing-cutters and move the same longitudinally of the body.

4. A threading and finishing tool comprising a body provided with a series of radial slots, one or more threading-cutters mounted in alternate ones of said slots, unthreaded or finishing cutters mounted in the remainder of said slots so as to be movable longitudinally therein, teats or projections on said finishing-cutters, a sleeve provided with an annular slot for engaging said projections and also provided with a cam-slot, and a pin or stud secured to the body and projecting into said cam-slot.

In testimony whereof I, the said HIRAM R. BORIE, have hereunto set my hand.

HIRAM R. BORIE.

Witnesses:

BENJ. H. RENSHAW,

WM. W. ANNER.