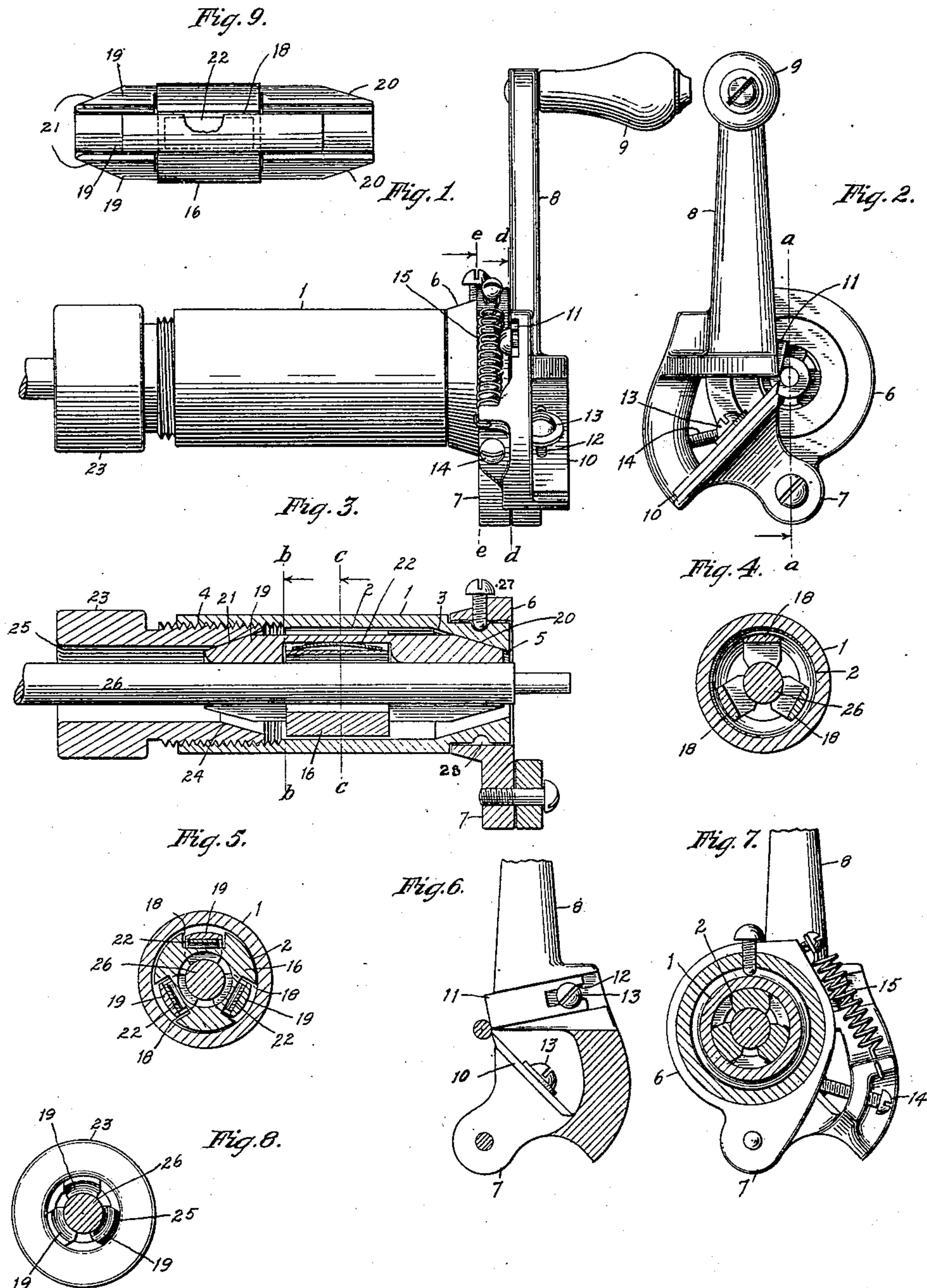


H. O. TAYLOR.  
HAND TENONING MACHINE.  
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991,668.

Patented May 9, 1911.



Witnesses:

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# UNITED STATES PATENT OFFICE.

HENRY O. TAYLOR, OF ROCKFORD, ILLINOIS.

HAND TENONING-MACHINE.

991,668.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed February 3, 1911. Serial No. 606,356.

To all whom it may concern:

Be it known that I, HENRY O. TAYLOR, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Hand Tenoning-Machines, of which the following is a specification.

The object of this invention is to form tenons on billiard cues to receive the ivory ends to which the leather tips are connected.

In the accompanying drawings. Figure 1 is an elevation. Fig. 2 is an end view. Fig. 3 is a section on dotted line *a a* Fig. 2. Fig. 4 is a section on dotted line *b b* Fig. 3. Fig. 5 is a section on dotted line *c c* Fig. 1. Fig. 6 is a section on dotted line *d d* Fig. 1. Fig. 7 is a section on dotted line *e e* Fig. 1. Fig. 8 is an end view. Fig. 9 is a face view of the center portion of the chuck.

The shank 1 is cylindrical and provided with a central bore 2 formed with one tapered contracted end 3, and one internally screw-threaded end 4. The end of the shank having the tapered opening 3 is reduced in diameter as at 5, and around this reduced end is located a head 6 from which extends an ear 7. The head is pivotally connected to the shank by a screw 27 carried by the head and entering an annular groove 28 formed in the shank. To the ear 7 is pivotally connected a lever 8 having a handle 9. This lever supports two knives, one 10 for reducing the diameter of the cue, and the other 11 for forming a square shoulder. Both knives are formed with slots 12 through which the set-screws 13 pass, and by means of which the knives are made adjustable to cut tenons of different diameters. To the lever 8 is connected a screw 14 which contacts with the head 6 and regulates the inward movement of the knives, thereby regulating the diameter of the tenon. A spring 15 has one end connected to the head 6, and its other end is connected to the lever 8, the action being to hold the set-screw against the head, and permit the lever to be moved so that the knives will be moved clear of the end of the cue in order that the un-cut end of the cue may be projected through the shank, and the force of the spring will hold the knives in contact with the cue as it is being reduced. The cue is held in the shank by a chuck to be hereinafter described, and the cue is reduced by revolving the lever 8

which will revolve the head 6, thereby revolving the knives with it.

Within the shank 1 is located a chuck which is self centering upon the cue, thereby adapting itself to the varying tapers of the cue. This chuck comprises a center tubular portion 16. This tubular portion is formed with radial slots 18, in this instance three in number. Within each of the slots 18 is located a dog 19 having tapered ends 20 and 21, and beneath each dog is located a flat spring 22 which serves to hold the dogs extended against the inner surface of the bore 2. An end 23 has a screw-threaded outer surface which enters the screw-threaded end of the shank. This end has a conical recess 24 in its inner end, and formed with an opening 25 through it.

The cue 26 is placed through the end 23, and through the tubular portion 16 and projected the required distance for a tenon. By turning in the end 23 in connection with the shank 1, the conical recess 24 will receive the tapered end 21 of the dogs and force the dogs and tubular portion 16 in the lengthwise direction of the shank until the ends contact with the cue. The springs 22 will be compressed during such movement. The dogs will accommodate themselves to the taper of the cue so that a firm and steady hold can be had upon it. After the cue is in position in the shank and held by the chuck, the knives 10 and 11 will be held in contact with the projecting end of the cue by the action of the spring 15. The knives are then rotated by the handle 9 which will carry the knives around the end of the cue and gradually reduce it until the screw 14 limits the further inward movement of the knives.

I claim as my invention.

1. The combination of a tubular shank, a clutch within the shank, an end for operating the clutch, a head pivotally connected to the shank, a lever pivotally connected to the head, and two knives adjustably supported by the lever.

2. The combination of a tubular shank, a clutch within the shank, an end for operating the clutch, a head pivotally connected to the shank, a lever pivotally connected to the head, two knives adjustably supported by the lever, an adjustable stop for the lever, and a spring connecting the lever and head.

3. The combination of a tubular shank



having a conical end, a tubular portion located within the shank, dogs connected to the tubular portion and having tapered ends, the tubular end having a screw-threaded connection with one end of the shank, and having one end of its center bore conical and adapted to receive one end of each of the dogs, a head pivotally connected to the shank, a lever pivotally connected to the

head, and two knives connected to the lever.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRY O. TAYLOR.

Witnesses:

A. O. BEHEL,

E. D. E. N. BEHEL.

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