

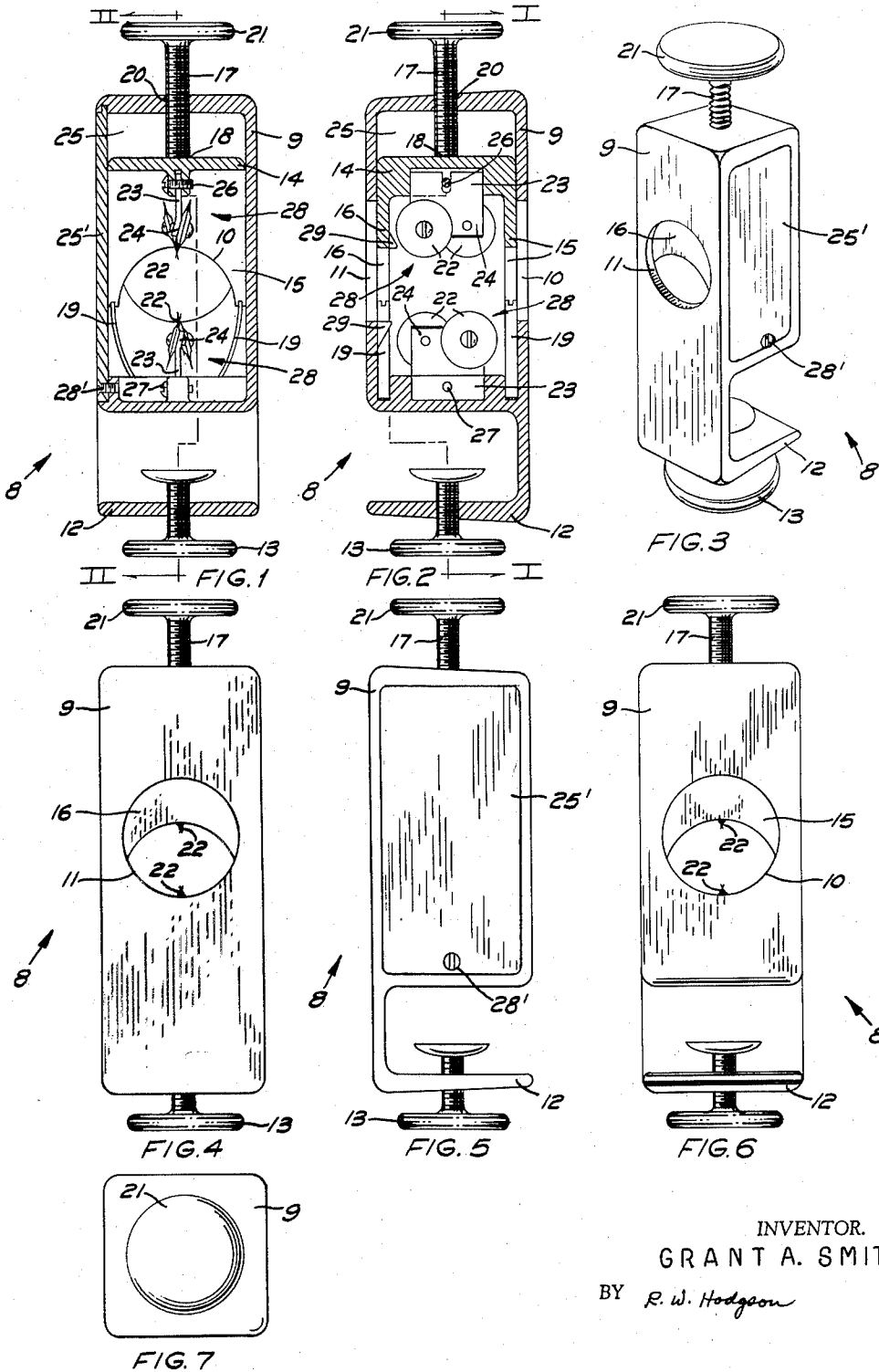
Dec. 23, 1958

G. A. SMITH

2,865,413

DOWEL GROOVING DEVICE

Filed April 22, 1957



INVENTOR.
GRANT A. SMITH

BY *R. W. Hodgson*

1

2,865,413

DOWEL GROOVING DEVICE

Grant A. Smith, Los Angeles, Calif., assignor of one-tenth to Gadget-Of-The-Month Club, Inc., Los Angeles, Calif., a corporation of California

Application April 22, 1957, Serial No. 654,168

8 Claims. (Cl. 144—136)

Generally speaking, the present invention relates to the grooving art and, more specifically, relates to a manually operable dowel grooving device.

Applicant is aware of the fact that prior art dowel grooving devices have been developed heretofore and applicant believes that all such prior art arrangements are disadvantageous for various reasons. The foremost reason is the complexity of these prior art grooving devices which normally require an inordinate amount of set-up time in order to groove a dowel or the like. A number of hand operations are required to set up the prior art devices for the grooving operation and as a direct result the cost of the grooving operation is fairly expensive. Quite frequently, in woodworking establishments, a great number of dowels varying in diameter must be grooved at once in order to make a particular piece of furniture or fixture and the delay required in resetting the prior art dowel grooving devices is very costly in time and money. It is almost imperative in working with custom built furniture and fixtures to groove the dowels before they are inserted into an aperture where glue has been applied. The grooves in the dowel distribute the glue evenly throughout the area to be glued, thereby equalizing the pressure in the particular joint. This even glue distribution and pressure equalization insures a tight joint which will not break down with age and changing weather conditions as rapidly as normal, thereby making it possible for the cabinet maker to make a well built piece of custom furniture for his customers which will stand up more readily to normal use.

The present invention was primarily designed to overcome the aforementioned and, generally speaking, can be said to be a manually operable dowel grooving device. It comprises a housing having axially aligned and congruent inlet and outlet openings and a flanged portion whereon clamp means are attached. A slidable carriage is telescoped within the housing and is cooperable for slidable transverse movement with respect to the axis of said inlet and outlet openings. The carriage is provided with an inlet and an outlet shutter which are cooperable for acting in concurrence to vary the diameter of the inlet and outlet openings. The transverse movement of the carriage is adjustably controlled by a screw having a flat end which abuts the top of the carriage and with spring means, mounted within the housing, biasing the carriage against the flat end of the screw. A duplex of spaced diametrically opposed grooving means provided with a duplex of staggered rotatable cutting rollers are mounted substantially transverse to the axis of the inlet and outlet openings. One of said grooving means is mounted with respect to the carriage and the other of said grooving means is mounted with respect to the base of the housing. The cutting rollers have their respective edges angularly inclined and extending beyond a plane parallel with respect to the transverse movement of the carriage and bisecting said inlet and outlet openings, whereby the rollers are cooperable for

2

making a groove along the longitudinal axis of a dowel inserted through the inlet and outlet openings. By twisting the dowel as it is inserted into the opening, it is possible to put a spiral groove on the dowel because of the resilient mounting of the rotatable cutting rollers.

From the above description of basic and generic forms of the present invention, it will be apparent to those skilled in the art that virtually all of the hereinbefore mentioned prior art problems and/or disadvantages are substantially entirely eliminated, met and/or overcome in and through use of the present invention.

For example, it is obvious that the dowel grooving device of the present invention may be rapidly and easily set up, and that, when mounted with respect to a work bench, it is very firmly positioned thereon in a manner which virtually completely eliminates the likelihood that the dowel grooving device will become accidentally disengaged from the work bench.

With the above points in mind, it is an object of the present invention to provide a manually operable dowel grooving device of greatly improved characteristics which is adjustably controlled and which is cooperable for making longitudinal or spiral grooving in a dowel.

It is a further object of the present invention to provide a device of the character set forth in the preceding object, which is inexpensive, simple, easy to operate and of virtually foolproof construction.

Other and allied objects will be apparent to those skilled in the art after a careful perusal, examination and study of the accompanying illustrations, the present specification, and the appended claims.

To facilitate understanding, reference will be made to the hereinbelow described figures, in which:

Fig. 1 is a vertical sectional view of the present invention taken along the lines I—I in Fig. 2;

Fig. 2 is a vertical sectional view of the present invention taken along the lines II—II in Fig. 1;

Fig. 3 is a perspective view of the dowel grooving device;

Fig. 4 is a front elevational view of the dowel grooving device looking into the inlet opening;

Fig. 5 is a side elevational view of the dowel grooving device;

Fig. 6 is a rear elevational view of the dowel grooving device looking into the outlet opening; and

Fig. 7 is a top plan view of the present invention.

Generally speaking, the manually operable grooving device, indicated generally at 8 in Figs. 1-6, consists of a housing 9 having an inlet opening 10, an outlet opening 11, and a flanged portion 12 whereon clamp means 13 are attached, as shown in Figs. 1-6. The inlet opening 10 and the outlet opening 11 are substantially congruent and are in axial alignment, as best shown in Fig. 2.

A carriage 14 is telescoped within the chamber 25 of the housing 9 and is cooperable for slidable transverse movement with respect to the axis of the inlet and outlet openings 10 and 11, as best illustrated in Figs. 1 and 2. The carriage 14 is provided with an inlet shutter 15 and an outlet shutter 16 which are cooperable for acting in concurrence to vary the diameter of the inlet and outlet openings 10 and 11 in order to accommodate various size dowels.

The transverse movement of the carriage 14 is adjustably controlled by a threaded screw 17 having a flat end 18 which abuts the top of the carriage 14 and with spring means 19, mounted within the housing 9, biasing the carriage against the flat end 18, as shown in Figs. 1 and 2. The screw 17 is inserted through the interiorly threaded opening 20 of the housing and with the head 21 adjustably controlling the rotation of the threaded screw 17.

A duplex of spaced diametrically opposed grooving means, indicated generally at 28, provided with a duplex

of staggered rotatable cutting rollers 22 are mounted substantially transverse to the axis of the inlet and outlet openings 10 and 11 and are cooperable for making a groove along the longitudinal axis of a dowel inserted through said openings.

The cutting rollers 22 have their respective edges angularly inclined and extending beyond a plane parallel with respect to the transverse movement of the carriage 14 and bisecting the openings 10 and 11. The cutting rollers 22 are rotatably attached to a duplex of spaced diametrically opposed mounting means 23 which have angularly inclined resilient split portions 24, as best shown in Fig. 1, with one of the opposed mounting means 23 being attached by the screw 26 with respect to the carriage 14 and the other one being attached by the screw 27 with respect to the base of the housing 9.

The dowel grooving device 8 has guide means 29, as best shown in Fig. 2, which are cooperable for guiding the grooved strip cut from the dowel out of the housing chamber 25.

The housing 9 has a cover plate 25' attached by the screw 28', whereby the cutting rollers 22 may be taken out for sharpening and for adjustment purposes.

It is possible with the present invention to make straight grooving and spiral grooving because of the rotatable mounting of the cutting rollers 22 on the resilient split portions 24.

Numerous modifications and variations of the present invention will occur to those skilled in the art after a careful study hereof. All such properly within the basic spirit, scope and/or teachings of the present invention are intended to be included and comprehended herein as fully as if specifically described, illustrated and claimed.

For example, it is obvious that the number and relative positioning of the cutting rollers may be modified substantially other than as specifically described and illustrated herein. Also the clamp means may be modified substantially.

The exact compositions, configurations, constructions, relative positionings, and cooperative relationships of the various component parts of the present invention are not critical, and can be modified substantially within the spirit of the present invention.

The embodiments of the present invention specifically described and illustrated herein are exemplary only, and are not intended to limit the scope of the present invention, which is to be interpreted in the light of the prior art and the appended claims only, with due consideration for the doctrine of equivalents.

I claim:

1. A dowel grooving device, comprising: a housing having an inlet opening and an outlet opening; said inlet and outlet openings being in axial alignment; a carriage telescoped within said housing cooperable for slidable transverse movement with respect to the axis of said inlet and outlet openings, said carriage being provided with an inlet and an outlet shutter cooperable for acting in concurrence to vary said inlet and outlet openings; control means cooperable for adjustably controlling the slidable movement of said carriage; grooving means cooperable for making a groove along the longitudinal axis of a work piece inserted through said inlet and outlet openings.

2. A manually operable dowel grooving device, comprising: a housing having an inlet opening and an outlet opening; said inlet and outlet openings being in axial alignment; a carriage telescoped within said housing cooperable for slidable transverse movement with respect to the axis of said inlet and outlet openings, said carriage being provided with an inlet and an outlet shutter cooperable for acting in concurrence to vary said inlet and outlet openings; control means cooperable for adjustably controlling the slidable movement of said carriage; spaced diametrically opposed grooving means provided with rotatable cutting rollers cooperable for making a groove along the longitudinal axis of a work piece inserted

through said inlet and outlet openings; said rotatable cutting rollers having their respective edges angularly inclined and overlapping each other.

3. A manually operable dowel grooving device, comprising: a housing having an inlet opening and an outlet opening; said inlet and outlet openings being substantially congruent and in axial alignment; a carriage telescoped within said housing cooperable for slidable transverse movement with respect to the axis of said inlet and outlet openings, said carriage being provided with an inlet and an outlet shutter cooperable for acting in concurrence to vary said inlet and outlet openings; control means cooperable for adjustably controlling the slidable movement of said carriage; spring means cooperable for biasing said carriage; spaced diametrically opposed grooving means provided with rotatable cutting rollers cooperable for making a groove along the longitudinal axis of a work piece inserted through said inlet and outlet openings, said spaced diametrically opposed grooving means being mounted substantially transverse to the axis of said inlet and outlet openings; said rotatable cutting rollers having their respective edges angularly inclined and overlapping each other.

4. A manually operable dowel grooving device, comprising: a housing having an inlet opening and an outlet opening; said inlet and outlet openings being substantially congruent and in axial alignment; a carriage telescoped within said housing cooperable for slidable transverse movement with respect to the axis of said inlet and outlet openings, said carriage being provided with an inlet and an outlet shutter cooperable for acting in concurrence to vary said inlet and outlet openings; control means cooperable for adjustably controlling the slidable movement of said carriage; spring means cooperable for biasing said carriage; spaced diametrically opposed grooving means provided with rotatable cutting rollers cooperable for making a groove along the longitudinal axis of a work piece inserted through said inlet and outlet openings, said spaced diametrically opposed grooving means being mounted substantially transverse to the axis of said inlet and outlet openings; said rotatable cutting rollers having their respective edges angularly inclined and overlapping each other; said cutting rollers of said grooving means being cooperable for making a spiral groove in a work piece inserted through said inlet and outlet openings.

5. A manually operable dowel grooving device, comprising: a housing having an inlet opening and an outlet opening; clamp means attached with respect to said housing; said inlet and outlet openings being substantially congruent and in axial alignment; a carriage telescoped within said housing cooperable for slidable transverse movement with respect to the axis of said inlet and outlet openings, said carriage being provided with an inlet and an outlet shutter cooperable for acting in concurrence to vary the diameter of said inlet and outlet openings; a screw abutting the top of said carriage cooperable for controlling the movement of said carriage; spring means, mounted within said housing, cooperable for biasing said carriage against said screw; a duplex of spaced diametrically opposed grooving means provided with a duplex of staggered rotatable cutting rollers cooperable for making a groove along the longitudinal axis of a work piece inserted through said inlet and outlet openings, said spaced diametrically opposed grooving means being mounted substantially transverse to the axis of said inlet and outlet openings; said rotatable cutting rollers having their respective edges angularly inclined and overlapping each other; mounting means whereon said cutting rollers are rotatably mounted.

6. A manually operable dowel grooving device, comprising: a housing having an inlet opening and an outlet opening; clamp means attached with respect to one end of said housing; said inlet and outlet openings being substantially congruent and in axial alignment; a carriage telescoped within said housing cooperable for slidable

transverse movement with respect to the axis of said inlet and outlet openings, said carriage being provided with an inlet and an outlet shutter cooperable for acting in concurrence to vary the diameter of said inlet and outlet openings; a screw abutting the top of said carriage cooperable for controlling the movement of said carriage; spring means, mounted within said housing, cooperable for biasing said carriage against said screw; a duplex of spaced diametrically opposed grooving means provided with a duplex of staggered rotatable cutting rollers cooperable for making a groove along the longitudinal axis of a work piece inserted through said inlet and outlet openings, said spaced diametrically opposed grooving means being mounted substantially transverse to the axis of said inlet and outlet openings; said rotatable cutting rollers having their respective edges angularly inclined and extending beyond a plane parallel with respect to said transverse movement of said carriage and bisecting said inlet and outlet openings; mounting means having angularly inclined resilient split portions whereon said cutting rollers are rotatably mounted.

7. A manually operable dowel grooving device, comprising: a housing having an inlet opening, an outlet opening, and a flanged portion; clamp means attached with respect to said flanged portion of said housing; said inlet and outlet openings being substantially congruent and in axial alignment; a carriage telescoped within said housing cooperable for slidable transverse movement with respect to the axis of said inlet and outlet openings, said carriage being provided with an inlet and an outlet shutter cooperable for acting in concurrence to vary the diameter of said inlet and outlet openings; a threaded screw having a flat end abutting the top of said carriage cooperable for adjustably controlling the transverse movement of said carriage; spring means, mounted within said housing, cooperable for biasing said carriage against said flat end of said screw; a duplex of spaced diametrically opposed grooving means provided with a duplex of staggered rotatable cutting rollers cooperable for making a groove along the longitudinal axis of a work piece inserted through said inlet and outlet openings, said spaced diametrically opposed grooving means being mounted substantially transverse to the axis of said inlet and outlet openings; said rotatable cutting rollers having their respective edges angularly inclined and extending beyond a plane parallel with respect to said transverse movement of said carriage and bisecting said inlet and outlet openings; a duplex of spaced diametrically opposed mounting means having angularly inclined resilient split portions whereon said cutting rollers are rotatably mounted, one

of said opposed mounting means being attached with respect to said carriage and the other of said opposed mounting means being attached with respect to the base of said housing.

8. A manually operable dowel grooving device, comprising: a housing having an inlet opening, an outlet opening, and a flanged portion; clamp means attached with respect to said flanged portion of said housing; said inlet and outlet openings being substantially congruent and in axial alignment; a carriage telescoped within said housing cooperable for slidable transverse movement with respect to the axis of said inlet and outlet openings, said carriage being provided with an inlet and an outlet shutter cooperable for acting in concurrence to vary the diameter of said inlet and outlet openings; a threaded screw having a flat end abutting the top of said carriage cooperable for adjustably controlling the transverse movement of said carriage; spring means, mounted within said housing, cooperable for biasing said carriage against said flat end of said screw; a duplex of spaced diametrically opposed grooving means provided with a duplex of staggered rotatable cutting rollers cooperable for making a groove along the longitudinal axis of a work piece inserted through said inlet and outlet openings, said spaced diametrically opposed grooving means being mounted substantially transverse to the axis of said inlet and outlet openings; said rotatable cutting rollers having their respective edges angularly inclined and extending beyond a plane parallel with respect to said transverse movement of said carriage and bisecting said inlet and outlet openings; a duplex of spaced diametrically opposed mounting means having angularly inclined resilient split portions whereon said cutting rollers are rotatably mounted, one of said opposed mounting means being attached with respect to said carriage and the other of said opposed mounting means being attached with respect to the base of said housing; said cutting rollers of said grooving means being cooperable for making a spiral groove in a work piece inserted through said inlet and outlet openings.

References Cited in the file of this patent

UNITED STATES PATENTS

166,429	Sturtevant	Aug. 3, 1875
1,668,004	Caron	May 1, 1928
2,780,253	Joa	Feb. 5, 1957

FOREIGN PATENTS

453,516	Italy	Dec. 3, 1949
510,595	France	Sept. 9, 1920