(No Model.)

W. EVANS.

CYLINDRICAL CUTTER.

No. 451,118. Patented Apr. 28, 1891.

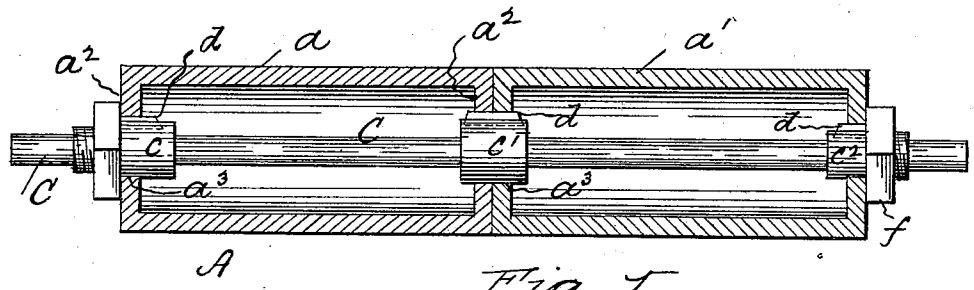


Fig. 1

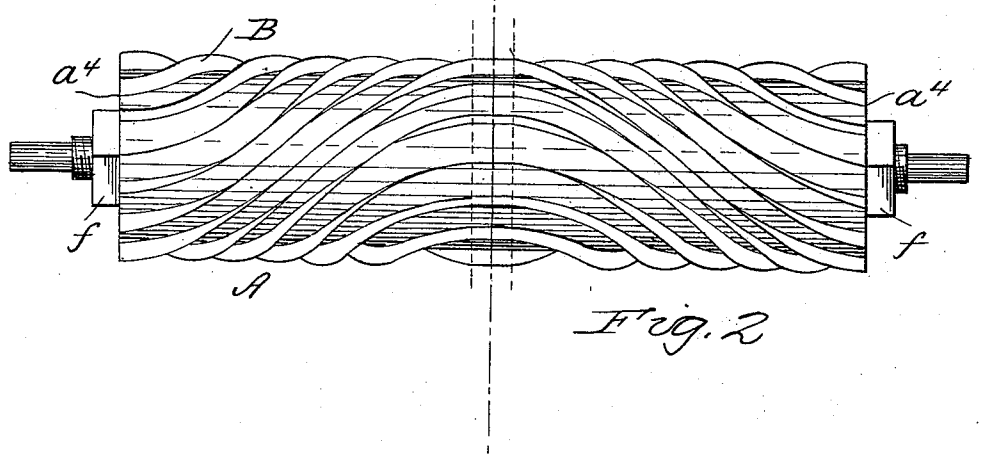


Fig. 2

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CYLINDRICAL CUTTER.

SPECIFICATION forming part of Letters Patent No. 451,118, dated April 28, 1891.

Application filed April 24, 1890. Serial No. 349,267. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EVANS, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Cylindrical Cutters, of which the following is a specification.

My invention relates to improvements in cylindrical cutters provided with a series of spiral knives or blades, whereof each knife or blade extends in a reverse direction from a straight or slightly-curved intermediate portion toward the respective ends of the cylinder, so as to cause the cylinder to work from the middle portions thereof outward. It is well known that the best results have been obtained in practice by the employment of cylindrical cutters provided with a series of spiral blades or knives, whereof each blade or knife is arranged in reverse directions from a slightly-curved or straight portion and extends toward the respective ends of the cylinder.

Heretofore it has been customary to manufacture such cylindrical cutters by making a core or cylindrical blank provided with a series of short straight or slightly-curved axial grooves communicating with spiral grooves winding in opposite directions away from said axial grooves toward the ends of the cylinder, and then fitting and wedging the series of knives or blades to place in said grooves. However, the operations of casting the cylinder and of cutting and finishing the grooves were not only tedious, but also costly, first, on account of the difficulty encountered in removing the castings from the mold, and, second, on account of the difficulty presented in finishing the grooves, more especially at and near the junction of the axially-disposed straight or slightly-curved grooves and the inversely-arranged spiral grooves. In practice such cutters were exceedingly expensive and their employment was in many cases precluded by their excessive cost.

The principal object of my present invention is to obviate the above-mentioned difficulties and to provide a comparatively-light, yet strong and durable, cutting appliance, and one which may be readily, rapidly, and cheaply made and finished by means of machine-tools, thereby appreciably decreasing the cost of the same.

In my invention the core of the cylinder is made in two or more sections, each having the grooves thereon arranged spirally and in the same direction throughout its length, so that the core may be readily withdrawn from the mold and easily finished by means of machine-tools. Moreover, the straight or reversely-curved and axially-disposed portions of the grooves are located at one of the extremities of each of said sections, so that they can be readily cast and finished. These sections are in use placed together end to end, with the straight or slightly-curved portions of the grooves, in proximity to each other and with the spiral grooves winding in reverse directions toward the ends thereof and attached together in any suitable manner.

The particular characteristic features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a longitudinal central section of a cylindrical cutter with the knives or cutters removed, showing a core composed of two sections and showing means for connecting the same together; and Fig. 2 is a top or plan view of a cylindrical cutter embodying features of my invention, showing a core comprising two sections, each having a series of axially and spirally arranged peripheral grooves and also showing said sections placed end to end with the axial and spiral grooves in communication and with continuous spiral knives or blades fitted into said grooves.

Referring to the drawings, A represents a cylindrical core composed of as many hollow sections a and a' as there are reversals of the direction of the spiral knives or blades B. Each of these sections a and a' is preferably provided with end flanges or heads a^2 and with a shaft-opening a^3. In the periphery of the sections at or near one extremity thereof are formed axially-disposed straight or slightly-curved grooves. (Represented in Fig. 2 between the center and dotted lines.

a^4 are peripheral spiral grooves communicating with the straight or slightly-curved axial grooves and disposed in reverse directions on each of the sections—that is, left-

handed on section a and right-handed on section a'. Each of these continuous straight or slightly-curved axial grooves and spiral grooves serve for the reception of the continuous knives or blades B, which are formed so as to run from a slightly-curved portion thereof (see center line, Fig. 2) in different or reverse directions toward the respective extremities of the cylinder.

C represents the shafts, onto which the hollow sections a and a' of the cylinder are mounted. This shaft C, passing through the sectional cylinder, is preferably provided with collars or bearings c, c', and c^2. In the cylinder-section heads a^2 are formed ways or seats for the insertion of keys d, to secure the sections a and a' to said shaft C, and so as to be adapted to freely rotate therewith. The outer collars c and c^2 of the shaft C are preferably screw-threaded to receive nuts f, which are fitted snugly up against the outer heads a^2 of the sections to prevent longitudinal or other movement of the same on the shaft C.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

A cylindrical cutter comprising a core having axially-disposed peripheral grooves and circumferential spiral grooves arranged in reverse directions and composed of a series of sections placed end to end, and each section having axially-disposed peripheral grooves at one extremity thereof and spirally-disposed circumferential grooves winding in one direction therefrom, a series of continuous spiral knives or cutters arranged in right and left directions from a straight or curved portion and fitted into said axial and spiral grooves, and means for uniting said sections, substantially as and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM EVANS.

Witnesses:
FRANK H. MASSEY,
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