(No Model.)

VAN BUREN WHEAT.

WOOD STEAMING APPARATUS.

No. 310,926. Patented Jan. 20, 1885.

FIG. 1.

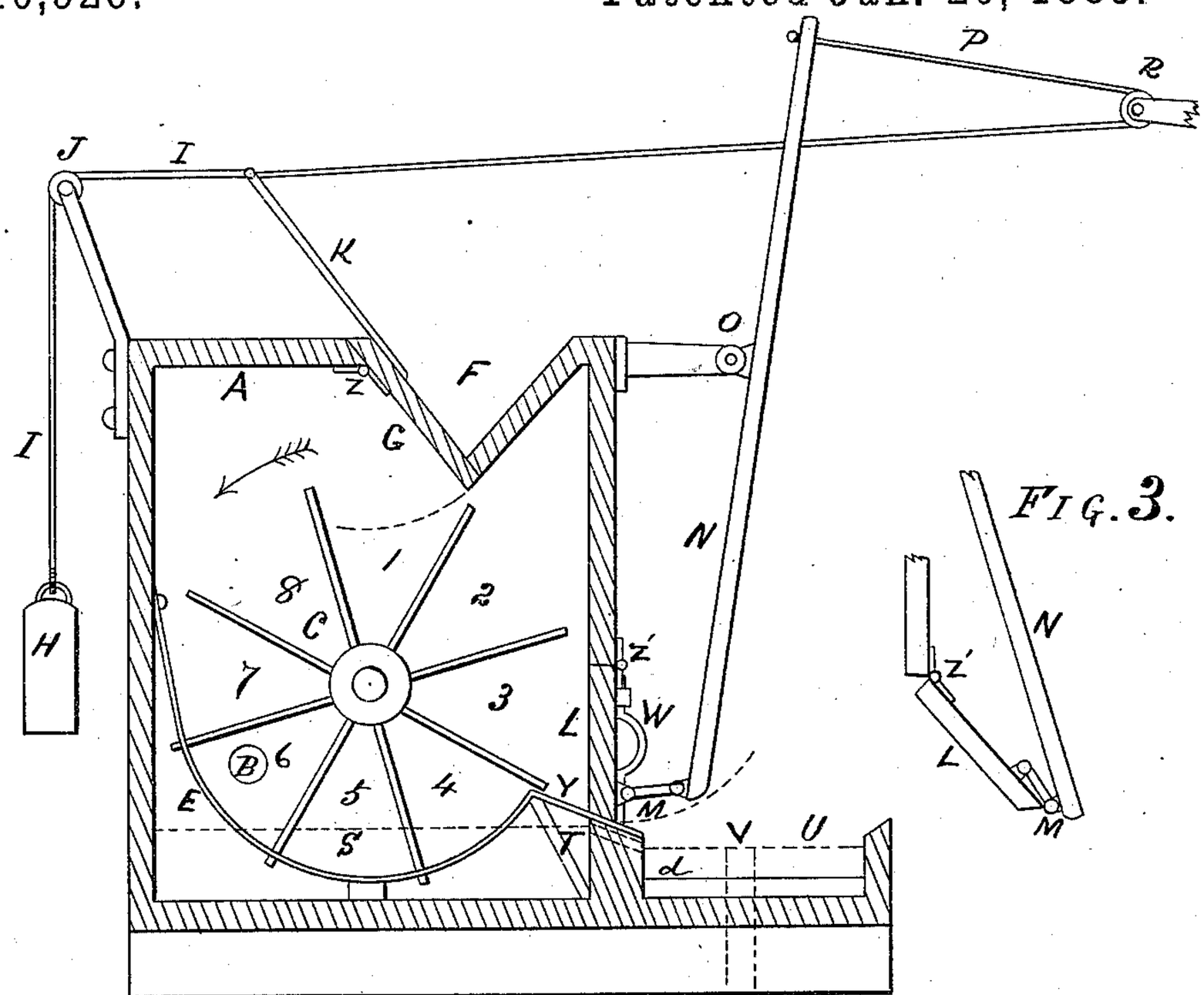
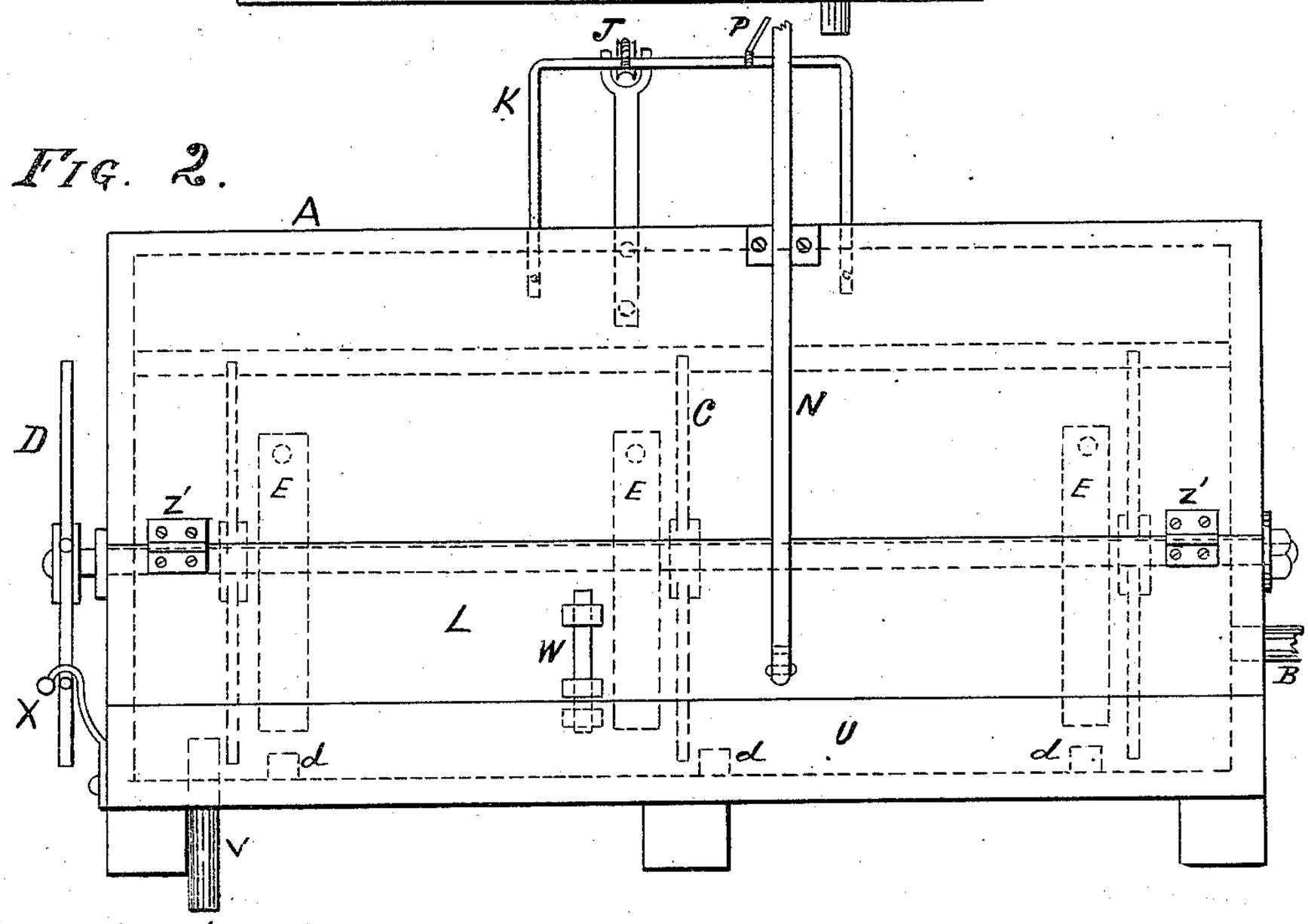


FIG. 3.

FIG. 2.



WITNESSES:

William R. Brooks.

William Brooks

INVENTOR:

Van Buren Wheat.

UNITED STATES PATENT OFFICE.

VAN BUREN WHEAT, OF ORLEANS, NEW YORK.

WOOD-STEAMING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 310,926, dated January 20, 1885.

Application filed February 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, VAN BUREN WHEAT, a citizen of the United States, residing at Orleans, in the county of Ontario and State of New York, have invented a new and useful Apparatus for Steaming and Boiling Wood or other Material Preparatory to Bending the same, of which the following is a specification.

My invention consists of a steam-tight box provided with certain novel mechanism for depositing the wood or material to be steamed within the box, while therein to thoroughly expose the material first to the action of steam and then to hot water, and finally discharge the same ready for bending, all the operations being performed with much greater rapidity and efficiency than by the usual hand process. The apparatus can be arranged for steaming any articles usually steamed for bending—such as hoops, fellies, sleigh-runners, &c.

Referring to the drawings accompanying this specification, Figure 1 represents an end view, partly in cross-section, of my improved apparatus; Fig. 2, a front elevation, and Fig. 3 a detailed view.

A is the steam-box, which can be filled with steam through the pipe B from an adjacent boiler, or by constructing the bottom of metal it may be placed over an arch and the contained water heated directly by a fire below. Running longitudinally through the box A is a rotating reel, C, consisting of a shaft, and in this case, three hubs, having each eight arms or spokes upon the inside of the box, and a similar one, D, upon the outside of the box. All these spokes are in a line with each other, (including those of the wheel D,) those on the inside of the box forming what I term a "series" of pockets, 1 2 3 4 5 6 7 8. (See Fig. 1.) Of course the reel may be constructed of a greater or less number of pockets than herein shown, and with any convenient number of sets of hubs and arms to suit the work to be done. The length of the spokes is such as to nicely clear the inside of the box.

E E E are a series of strips of metal, fastened to the box, forming concave guides or ways, and of about two inches shorter radius than the spokes of the reel—that is, the spokes of the reel project below the concave guides about two inches—the use of which will be explained in the operation of the apparatus.

F is a hopper extending the entire length of the box. One side, G, of the hopper is hinged at Z, so as to open inward. G is kept closed by the weight H, attached to the rope I, passing over the pulley J, and attached to the handle K rigidly secured to G.

At the lower front of the steam-box, and extending its entire length, is a door, L, hinged at its upper edge, (see Z',) and opening outward. Attached to the door L by a short pitman, M, is the lever N, pivoted to the standard O attached to the box. To the upper part of the lever N is fastened the rope P, which passes over the fixed pulley R, and, returning, is fastened to the handle K. It will thus be seen that the weight H keeps the doors L and G closed.

Hot water stands in the steam-box to about the height shown by the dotted line S, any surplus passing out of the overflow-pipe T (shown in dotted lines) into the trough U, in which hot water is retained to a certain height, any surplus passing out of the waste-pipe V.

The operation of the apparatus is as follows: A number of sticks of wood—say about twenty at a time if for barrel-hoops is the kind to be steamed for bending—are placed in the hopper F. W is a handle, the lower part of which is a bolt which slips into a staple below to securely lock the door L. This must first be released, when the door L is opened by pulling outward on the handle W. This moves the lever N and, through the cord P and handle K, opens at the same instant the door G of the hopper F, depositing the material into the upper pocket of the reel C, when the doors L and G are instantly closed. The reel is then rotated in the direction of the arrow one division, by releasing the catch X and turning the outside wheel, D, until the next arm or spoke engages with the catch X. Another deposit of material is placed in hopper F. The above movements are repeated and the second pocket is supplied, and so on until all the pockets of the reel have been filled. Some, however, have by this time been discharged into the trough U, which operation

remains to be described. As the reel rotates the material is kept in the pockets by the concave guide strips or ways E E E, also (at the bottom of the reel) by the buoyancy of the water. When the first-filled pocket reaches the position occupied by 3 in Fig. 1, the material slides out of the pocket down the inclined ways Y, pressing against the door L, which when said door is opened deposits the material into the trough U, and at the same time, the door G being opened, a new lot is dropped into the upper pocket of the reel, and so on continuously and simultaneously it will be seen dropping fresh material from the hopper F into the upper pocket of the reel, and well steamed and boiled material out of the door L into the trough U.

The trough U being partly filled with hot water by the overflow from the steam-box, the discharged material is kept in excellent condition until the instant of being conveyed to the bending-machine.

In the trough U is a series of bridges, *d d d*, upon which the material rests in the hot water. The utility of the bridges *d* is to hold the bulk of the material near the surface of the hot water, so that the operator can gather up the material without scalding his hands. While the water alone would sustain a few pieces of the material upon its surface, when a full deposit is thrown into the trough the weight of the upper part would submerge a large part thereof. While the bridges *d* keep the material near the surface of the water, the material is all exposed to the heat and steam escaping from the hot water, and hence kept in good condition for bending.

The combined process of first subjecting the wood or material to steam and then to hot water possesses great practical advantages, not only in the rapidity of the preparation, but in the superior condition of the wood for bending. The action of the steam (more or less dry) is to intensely heat the wood. The immersion in the hot water softens it. By this combined process the material is made much softer than when only either steamed or boiled, and that condition is reached in a very much shorter time; hence an improved result and a quicker one is obtained. This has been demonstrated by the practical use of the apparatus.

By the peculiar arrangement of the double-jointed pitman M in relation to the lever N and door L, the latter can be retained in an open position, as shown in the detailed view, Fig. 3, if desired.

It will be seen that the buoyancy of the material assists to retain the same in the lower pockets of the reel, and also renders the rotation of the reel much easier. The hopper F may be constructed to deposit in the pocket marked 2 in the drawings, but less power is required to rotate the reel when deposited as shown. In either case one or more pockets on the upward side of the reel are empty, (having been discharged through the door L,) thus greatly assisting the rotation of the reel.

It will also be seen that the material is first exposed to steam, and finally, by the rotation of the reel, to hot water, which is believed to be the most efficient and thorough method of preparing wood for bending.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a wood-steaming apparatus, the rotating reel C, consisting of a shaft, and the inner spoked wheels, and the outside registering-wheel, D, operating in connection with the spring dog or catch X, all in combination with the box A, substantially as described.

2. The concave guide strips or ways E E E, operating, with the water, to retain, support, and convey the material in the pockets of the reel, in combination with the inclined ways Y and box A, substantially as described.

3. In a wood-steaming apparatus, the hopper F, with its hinged trap or door G, in and through which the material to be steamed is respectively placed and deposited upon the reel C, in combination with the steam-box A, and the operating mechanism consisting of the handle K, rope I, pulley J, and weight H, substantially as described.

4. In a wood-steaming apparatus, the door L, (through which the raw material is deposited upon the reel,) and the door G, (through which the steamed and boiled material is discharged for use,) in combination with their operating and connecting mechanism, consisting of the handle and catch W, pitman M, lever N, handle K, pulleys R and J, ropes P and I, and weight H, by which the said doors L and G are simultaneously opened and closed, for the purposes herein set forth and described.

5. In a wood-steaming apparatus, the auxiliary trough U, with its bridges *d d d*, into and upon which the prepared material is discharged and transiently held until required for use, in combination with the steam-box A and overflow-pipe T, substantially as set forth.

6. In a wood-steaming apparatus, the combination of the rotating reel C, concave guide strips or ways E E E, inclined ways Y, all operating to convey and guide the material through the apparatus, hopper F, and doors L and G, with their connecting and operating mechanism, by which they are simultaneously opened and closed to respectively deposit and discharge the material, substantially as described, all in combination with the auxiliary trough U and steam-box A, substantially as and for the purposes herein set forth.

VAN BUREN WHEAT.

Witnesses:
WILLIAM R. BROOKS,
WILLIAM BROOKS.