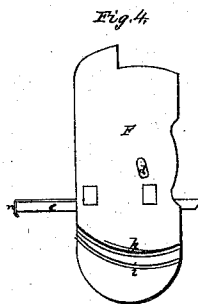
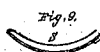
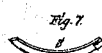
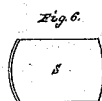
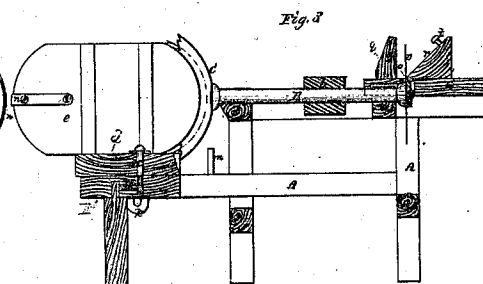
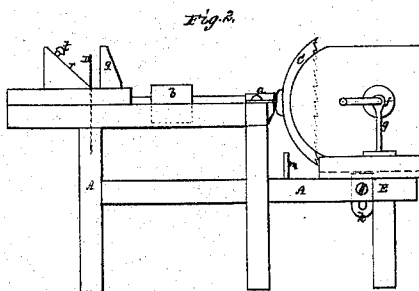
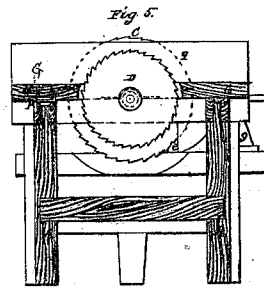
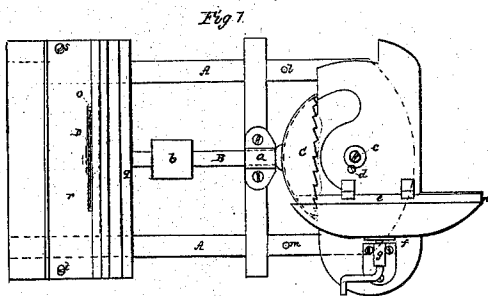


*C.H. Dana,*

*Makg. Wooden Trays.*

*No. 102,920.*

*Patented May, 10, 1870.*



*Witnesses*  
*S. W. Piper*  
*L. N. Wilson*

*Charles H. Dana.*  
*by his attorney*  
*N. N. Ledy*

# United States Patent Office.

CHARLES HENRY DANA, OF WEST LEBANON, NEW HAMPSHIRE.

Letters Patent No. 102,920, dated May 10, 1870.

## IMPROVEMENT IN MACHINE FOR THE MANUFACTURE OF WOODEN TRAYS.

The Schedule referred to in these Letters Patent and making part of the same.

To all persons to whom these presents may come:

Be it known that I, CHARLES HENRY DANA, of West Lebanon, of the county of Grafton, and State of New Hampshire, have made a new and useful invention, having reference to the manufacture of Wooden Trays; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view of the machinery used by me for performing the sawing of a block of wood for conversion of it into a tray;

Figure 2 is a side elevation; and

Figure 3, a longitudinal section of such mechanism.

Figure 4 is an under-side view of the reciprocating saw-carriage.

Figure 5 is a transverse section, taken through the plane circular saw used in making the sides of the interior of the tray.

Figure 6 is a top view;

Figure 7, a side elevation;

Figure 8, an end view; and

Figures 9 and 10 are sections of the concavo-convex cutter or chisel, used for separating from the sawed blocks the portion necessary to be removed for the formation of the hollow of the tray.

I would remark that wooden bowls may be made by the machine to be hereinafter described.

The mode or process of making a tray by the machine hereinafter described, is analogous to that described in the United States Patent No. 13,169, although there are differences between the two. My invention has reference to the machine in which the spherical concavo-convex cutter has a rotary motion in one direction only, it not having an orbital motion while in revolution, as is the case with the spherical cutter shown in such patent. In my machine the block has a circular movement while being cut. Thus it will be seen that there are distinctive features of difference between the two machines.

In such of the drawings as the same may be shown—

A denotes the frame of the end and side-sawing machinery.

This frame supports, in suitable bearings, *a a*, a horizontal shaft, B, provided with a driving-pulley; *b*.

On one end of the said shaft there is fixed a concavo-convex saw, C, which is the segment of a hollow sphere, the teeth being cut in its periphery.

The shaft also carries a plain circular saw, D, the two saws being arranged on it in manner as represented.

There is a platform or shelf E extended from the frame A.

From this platform a pivot, *c*, is projected upward

into a slot, *d* made in the base of a poppet-head or carriage F.

A flat plate or abutment, *e*, is raised vertically on the base of the carriage, and is to operate with a clamp-screw, *f*, (screwed through a post, *g*,) in holding a block of wood to the carriage.

The said carriage has two curved grooves *h i* made in its bottom or base, and arranged with respect to the slot *d*, in manner as represented in fig. 4.

Either of such grooves is to receive a stud or projection, *k*, extended up from a shelf or platform, E, and arranged therein in manner as shown in the drawings.

Two stops, *l m*, elevated in the platform, and disposed in manner as represented, serve to arrest the carriage at the extremes of its curvilinear movements.

Furthermore, there is at one end of the abutment *e* a stop or gauge, *n*, against which one end of a block to be cut is to rest while fastened to the abutment preparatory to or while being sawed by the dished or spherical segment saw.

The circular saw extends up through a long slot, *o*, made in a platform, G, which rests on the top of the frame A, and is hinged to it, the hinges being disposed as seen at *p*.

Elevated on this platform is a vertical guide or ledge, *q*, and an inclined guide or ledge, *r*; the two being disposed on opposite sides of the kerf or slot *o*, and with respect to the platform G, in manner as represented.

In using the machinery above described for making a tray, the block from which it is to be cut being trapezoidal, or thereabouts, in transverse section, is to be placed with its larger base against the abutment *e* and the stop *n* thereof, and held firmly to the former by the clamp-screw *f*. Next, the saws being supposed to be in revolution, the carriage F is to be pressed endwise, so as to bring one end of its slot *d* closely against the pivot *c*. Next, the carriage should be turned horizontally on the said pivot, so as to cause the dished or spherical saw to cut into the block, so as to form the exterior rounded surface of one end of the tray, after which the carriage should be moved back, and next, moved endwise, so as to bring the other end of its slot up to the pivot. This done, the carriage should be again turned on the pivot, so as to cause the spherical saw to again enter the block, so as to cut the hollow of one end of the tray. The block should next be turned over within the carriage and fixed to the abutment, after which its other end should be twice sawed into, in manner as was explained with reference to its first end. Next, the block is to be transferred to the platform G, previously elevated

above the circular saw, the larger base of the block being made to rest on the inclined surface of the ledge *r*, and with the block also resting against the upright ledge or guide *q*. Next, the platform should be depressed, and the block be moved from one to the other of two stops *s t*, projecting from the face of the ledge *r*, the whole being to cause the circular saw to cut into the block from one of the spherical cuts to the other, so as to form one side of the hollow of the tray.

The other side of the said hollow is next to be made by the same means, in a similar way, when it will be found that the tray, at its bottom, will still be connected with the remainder of the block. To separate the two, I use the tool or concavo-convex chisel, shown at *S* in figs. 6, 7, 8, and 9, which has a sharp edge at one end. This is to be driven into one of the kerfs made by the spherical saw, or into each of them in succession, as circumstances may require, so as to split the said remainder from the tray. The chisel is hollowed, both transversely and longitudinally.

In this way a tray may be expeditiously formed,

the finishing or smoothing of it being subsequently performed by suitable means.

I make no claim to any thing or things, combinations, or arrangements, as described in either of the United States patents, No. 13,169, 94,592.

I claim as my invention the following, that is to say:

1. In connection with the spherical saw *C* and the rotary carriage *F*, the slot *d*, the pivot *c*, the guides *h i k*, and the stops *l m*, arranged as described, the whole being to enable the said carriage to be moved and arrested relatively to the saw, substantially as and for the purpose as described.

2. The arrangement and combination of the single shaft *B*, with the circular and spherical saws *C D*, the block carriage *F*, and platform *G*, provided with appliances substantially as described, for holding and guiding a block in the ways and under circumstances as set forth.

Witnesses: CHARLES HENRY DANA.

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DANIEL HINKLY.