(No Model.) 2 Sheets—Sheet 1.

J. S. BUTTERFIELD & J. B. BRYANT.

SHOVEL HANDLE LATHE.

No. 247,743. Patented Oct. 4, 1881.

Fig. 1.

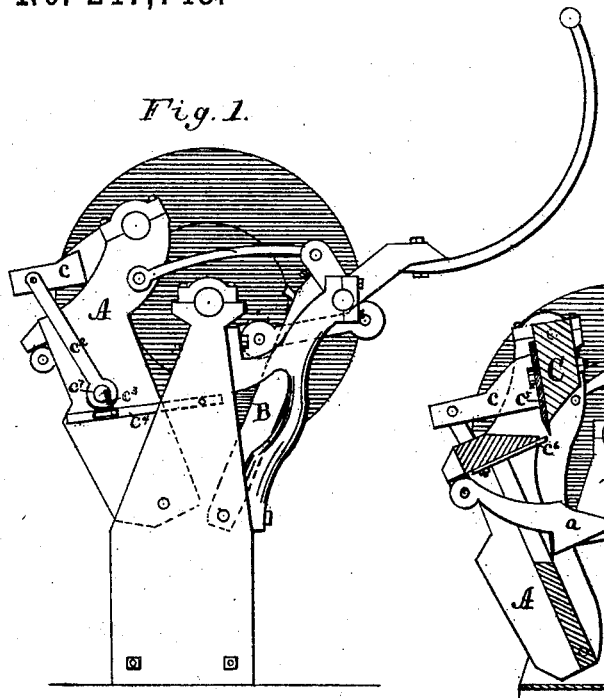


Fig. 2.

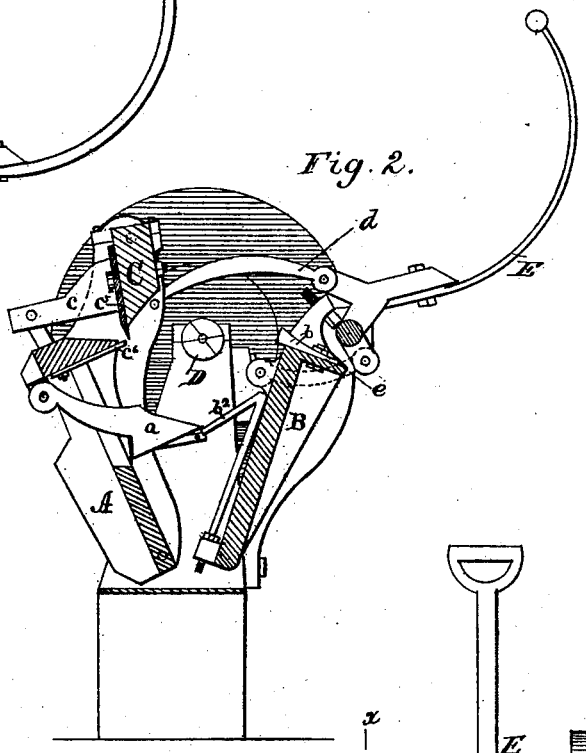
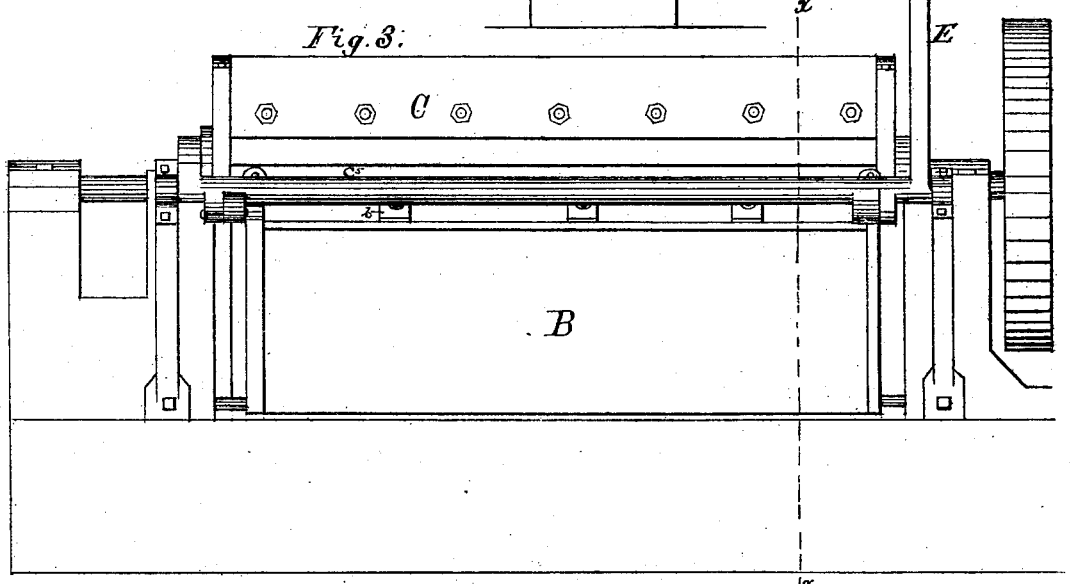


Fig. 3.



Witnesses:

C. B. Fryer

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

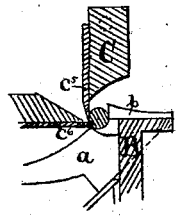
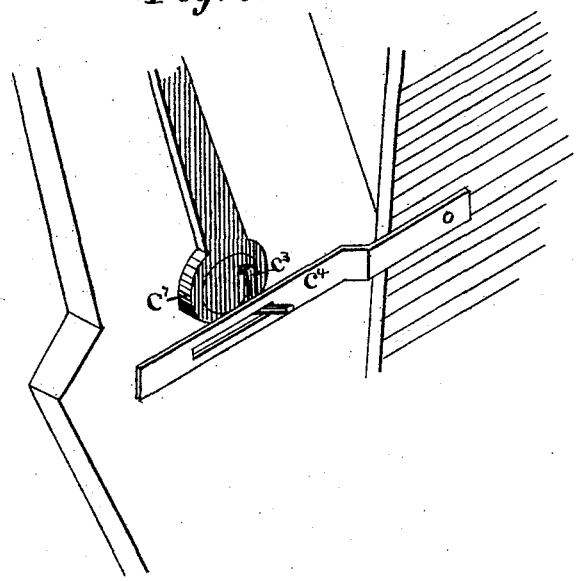


Fig. 5.



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UNITED STATES PATENT OFFICE.

JEREMIAH S. BUTTERFIELD, OF VASSALBOROUGH, AND JAMES B. BRYANT, OF WATERVILLE, MAINE.

SHOVEL-HANDLE LATHE.

SPECIFICATION forming part of Letters Patent No. 247,743, dated October 4, 1881.

Application filed October 21, 1880. (No model.)

To all whom it may concern:

Be it known that we, JEREMIAH S. BUTTERFIELD and JAMES B. BRYANT, citizens of the United States, residing the first in Vassalborough and the second at Waterville, both in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Shovel-Handle Lathes; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Our invention relates to that class of lathes used for turning shovel-handles; and the object of our invention is to provide means by which the hardest of wood may be turned easily and rapidly.

Hitherto lathes of this kind have been so constructed that many handles were spoiled by the vibration of the parts of the machine which held the knife, and the rests which were intended to hold the handle steadily in place. The knife-bar being immovable, the shaving which the knife took from the handle was of a uniform thickness, that thickness being considerable in order to secure rapid work. The consequence was that when the handle came down to its proper size for finishing it was often unable to resist the strain which the knife exerted upon it, and would vibrate to such an extent that its shape would be spoiled, the rests and the bearers which came against it being unable to hold it in place.

We overcome this difficulty, first, by making our knife-bar swing on trunnions in such a manner that as the handle is turned the shaving is made thinner and thinner until, when the handle is smallest, the shaving is very thin and the resistance to the knife correspondingly small; second, by constructing the jaws of our lathe with web and flanges of solid, or nearly solid, cast-iron, the whole jaw forming one solid and continuous piece.

In the accompanying drawings, Figure 1 represents an end view of our lathe. Fig. 2 represents a section through the line *x x*, Fig. 3. Fig. 3 represents a front elevation. Fig. 4 represents a section showing the position of the knife-bar and bearings when the handle is just being finished. Fig. 5 represents a detail of the cam which gives the knife-bar its motion.

A and B are the two jaws of the lathe, each hung to the bed of the lathe by trunnions. Each jaw is composed of a solid casting of iron, having a considerable thickness. The jaw B carries the rest *b*, which is so regulated as to come against the handle as it is being turned down. The jaw A carries the bearer or rest *a*, the end of which rests on an inclined plane, so that it rises as the jaw advances. The knife-beam C is pivoted to the top of the jaw A, and projecting back from each end of it are the arms *c*. Hinged to the ends of these arms are the sweeps or rods c^2, the lower ends of which are connected with the eccentrics c^7. The axes of these eccentrics project from the side of the jaw, and on their ends are cranks c^3, over which play the slotted rods c^4, one end of which is pivoted to the body of the lathe. The position of the eccentrics and the cranks is such that when the jaw moves up the rods c^2 are raised. c^5 is the knife, opposite and immediately below the edge of which projects the guard c^6. D is the head-center of the lathe, on which the handle is placed to be turned.

The jaws are operated by means of levers connected with a handle, by which they are made to approach each other when a shovel-handle is to be turned; but, being no part of our invention, and not necessary to illustrate it, we will not describe their action.

The knife here shown is straight and not curved, as in actual shovel-handle lathes, but it serves to illustrate our invention.

Our invention operates as follows, viz: When the jaw A first begins to move forward the thickness of the shaving is considerable, this thickness being governed by the distance between the edge of the knife and the end of the guards c^6. The handle is then quite heavy, and is able to bear without springing the strain from the knife. As the jaw continues to move forward the crank c^3 comes against the end of the slot in the rod c^4, and is thus forced back, turning the eccentric c^7, which in turn raises the rod c^2 and the arm *c*. As the arm *c* is raised the knife-beam C is turned and the knife drawn back, diminishing the distance between it and the end of the guard c^6, and thus making the

shaving thinner. Finally, when the handle is finished, the shaving is very thin.

The position of the knife and the parts that support the handle at this point is seen in Fig. 4.

The eccentric c^7 is arranged in such a position that when the jaw first begins to move up it turns the knife-beam comparatively little; but when the cut is nearly completed it moves faster. In this way we get a thick shaving in cutting down the rough surface and a thin one in finishing.

The peculiar form and construction of my jaws co-operate with my movable knife-beam to prevent any motion of the handle while being turned by holding the various bearings which come against it with great firmness. We are thus able to do good work, even when our movable knife-beam is not used and a shaving of considerable thickness is taken from the handle.

It is evident that there are a variety of ways in which the knife-beam may be swung as described; but we have shown what we consider the most efficient way.

We claim—

1. In a shovel-handle lathe, the movable knife-beam C, operated by the eccentrics c^7, rod c^2, crank c^3, and rod c^4, substantially as described and shown.

2. In a shovel-handle lathe, the combination of the solid jaws A and B with the guard c^6 and knife c^5, operated by rod c^2, eccentric c^7, crank c^3, and rod c^4, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JEREMIAH S. BUTTERFIELD.
JAMES B. BRYANT.

Witnesses:
S. W. BATES,
EDWIN F. LYFORD.