

Sheet 1, 3 Sheets.

Woodburn & Smith.

Bending Plow Handles.

N^o 110,184.

Patented Dec. 13, 1870.

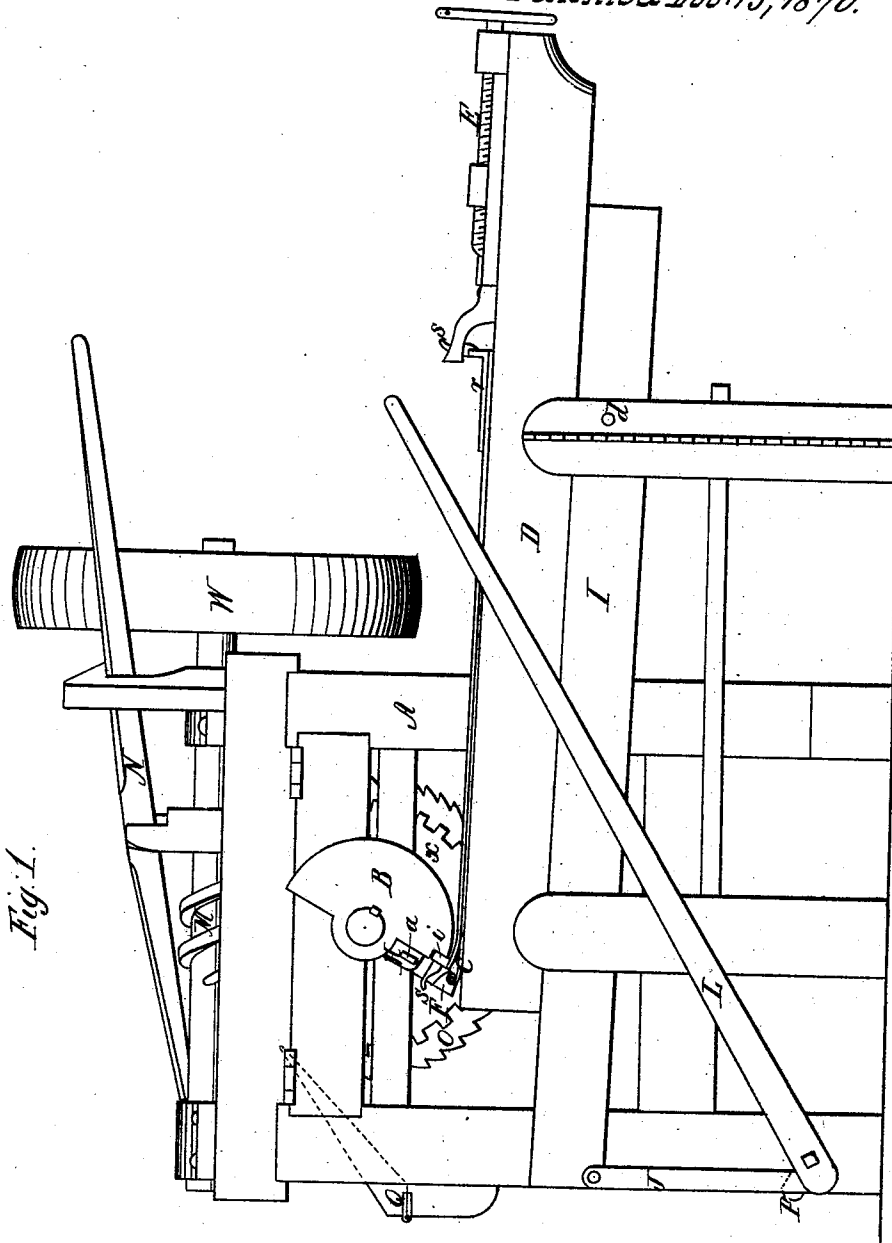


Fig. 1.

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Sheet 2, 3 Sheets.

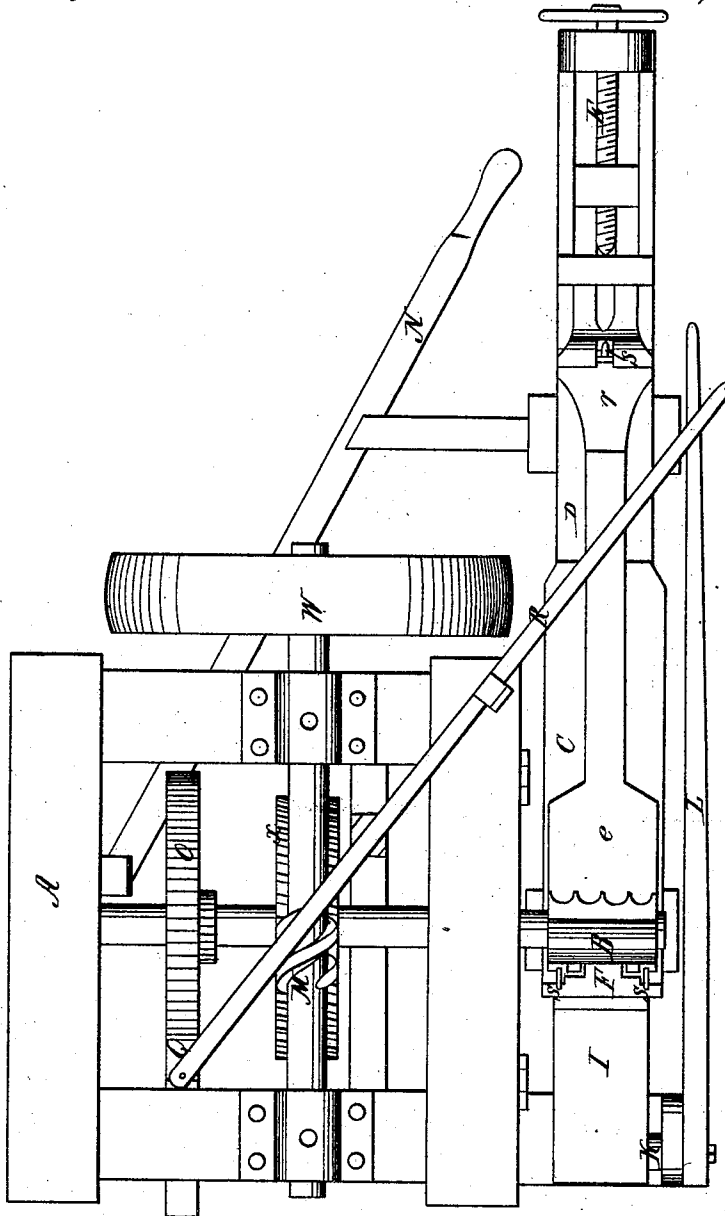
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Fig. 2.



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Fig. 4.

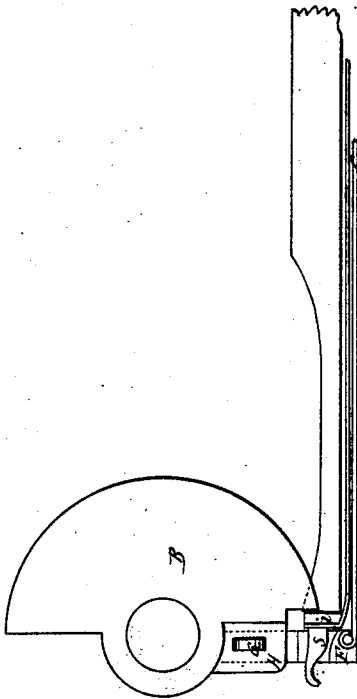


Fig. 3.

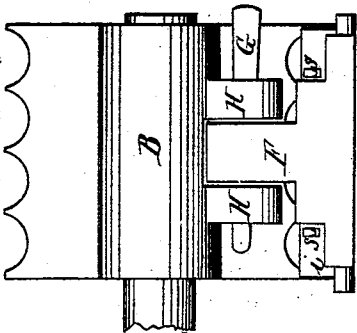


Fig. 5.

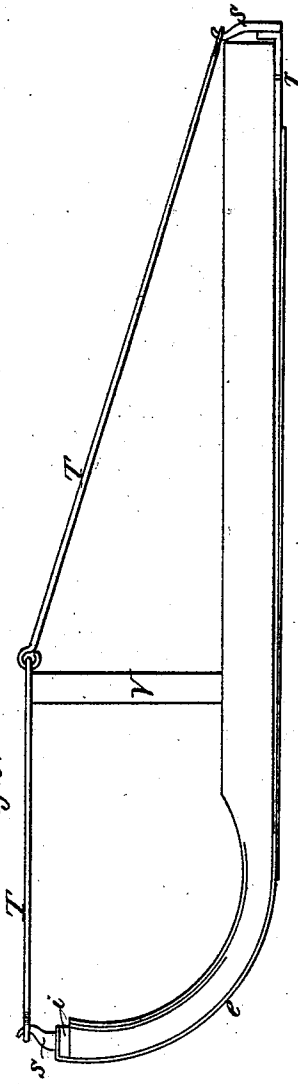
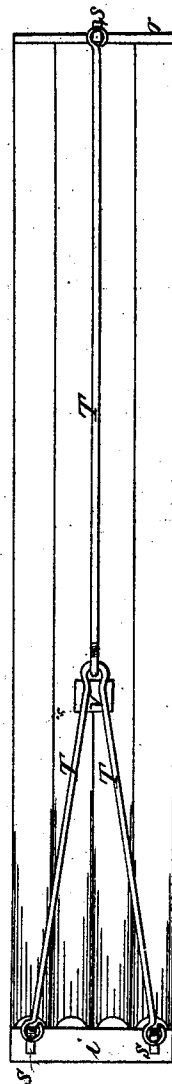


Fig. 6.



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JACOB WOODBURN, OF ST. LOUIS, MISSOURI, AND SAMUEL F. SMITH, OF INDIANAPOLIS, INDIANA, ASSIGNORS TO OSGOOD, SMITH & COMPANY, OF INDIANAPOLIS, INDIANA.

Letters Patent No. 110,184, dated December 13, 1870.

IMPROVEMENT IN MACHINES FOR BENDING PLOW-HANDLES.

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

To all whom it may concern :

Be it known that we, JACOB WOODBURN, of the city and county of St. Louis and State of Missouri, and SAMUEL F. SMITH, of Indianapolis, in the county of Marion, and State of Indiana, have invented new and useful Improvements in Machines for Bending Plow-Handles; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon making part of this specification.

This invention relates to improvements in machine for bending plow-handles, &c., and consists in a simple, convenient, and cheap device for retaining the plow-handle in bent form while being dried, and in the relative construction of said device, and a segmental rotating former whereby they may be easily and quickly connected or disconnected, all as herein-after set forth.

Figure 1, sheet 1, is a side elevation of the machine.

Figure 2, sheet 2, is a top or plan view.

Figures 3 and 4, sheet 3, are detached detail views of the device for attaching the flexible strap to the former.

Figures 5 and 6, sheet 3, are side and top views of the device for holding the bent wood in shape until dried and set.

Similar letters of reference indicate corresponding parts of the several figures.

A is the frame-work, to which all the other parts are attached;

B is the former, around which the wood is bent;

C is the flexible strap; and

D is the sliding beam or bed, with its end pressure and relieving screw, E, in common use.

The flexible strap C is secured by its rear end to the sliding bed, in the usual manner.

In order to facilitate attaching the flexible strap C to the former B, and detaching it therefrom, so that the handles may be readily and conveniently introduced into and removed from the machine, we have constructed an iron T-head, F, so formed as to admit of the convenient insertion of the end piece *i* of the handle-strap, and which is attached to the flexible strap C by a hinge-joint, and is furnished with an eye to receive a drift-key, G, by which the head is secured in the jaws H of the former B, as shown in figs. 1, 3, and 4.

This manner of attaching the strap C to the former B, renders it less liable to be broken than any of the methods now in use, as it is so constructed as to prevent any short bend in the strap as it is curved around the former.

We have also made an improvement in the man-

ner of applying pressure to the back of the handles during the process of bending, by which it is more conveniently effected and greatly increased, and the backs of the handles prevented from shivering or splintering, and the handles pressed so firmly against the former B as also to prevent the inside from becoming kinked or buckled.

This improvement consists in the arrangement of the bed-plate I, upon which the sliding bed D rests as a lever, with its fulcrum at *a*, the connecting bars J, rock-shaft K, furnished with a short lever, P, and lever L, the rear end of which extends back to a convenient position for the operator to handle.

The arrangement of this compound system of leverage, combined with the sliding beam D and the former B, is such as to admit of all the movement that is necessary, and multiplies the power applied to a very great amount, and is sufficient to force the fibers of the wood to conform to the former B.

The device for engaging and disengaging the worm M on the shaft of the driving pulley, with the worm X, on the same shaft, with the former B, consists simply in hinging the upper part of the frame A, on which the worm-shaft is hung, to the principal frame, as shown, and arranging the lever N in convenient position to be actuated by the operator, by which the upper hinged part of the frame can be raised or lowered at pleasure.

Power to drive the machine is applied to pulley W, giving the worm M constant rotation, and the device here shown is designed to make it more convenient to actuate the former and bring it more completely under the control of the operator than heretofore.

In order to hold the former firmly, and prevent its turning back when the worm is disengaged from the worm-wheel, and thus retain the bend given to the handles until the harness is attached that holds them in shape after removal from the machine, a ratchet-wheel, O, is fixed upon the same shaft with the former and worm-wheel, and is held by the pawl Q.

This pawl is held down upon the ratchet-wheel O by a spiral spring not seen in the drawings, and is raised, as may be desired, by means of the lever R, which also extends to a position within convenient reach of the operator.

In order to retain the handles in shape after they are bent, and to securely hold all the bend that is desired or given them by the machine and render them less liable to be disarranged in handling, we have devised the improved strap and harness shown more clearly in figs. 5 and 6.

This strap consists of a strap, *c*, of sufficient length to extend around the curve, and breadth to extend across any number of handles that it is desired to bend.

The front end of this strap is furnished with a substantial end piece, *i*, which is securely attached to it, and which is furnished with hooks, *S*.

A narrow strap connects the rear end of the broad strap *e* with a heel piece, *r*, which is also furnished with a hook, *S*.

The harness is made of iron rods *T*, and are furnished with loops at their ends, by which they are attached to the hooks *S*, as shown, and are strained up to hold the bend in the handles by the straining piece or props *V*.

The former *B* is notched to receive the end piece *i* of the handle-strap between it and the T-head *F*, as shown.

The operation of the machine is as follows:

The handle-strap *e* is laid upon the main strap *C* and sliding beam *D*; the head *F* of the main strap is then fastened to the former *B* by the insertion of the key *G* through the mortises in the jaws *H* of the former and eye of the iron head of the main strap; the handles, having been first turned in a lathe to the proper shape and steamed, are laid upon the strap and pushed up to the solid iron end *i* by the end pressure and relieving screw *E*, so as to give them sufficient upset; the compound lever is then applied, bringing both the straps and handles up to the form and pressing the handles with very great force into the grooves prepared for them in the former; the lever *N* is then raised and the form begins to rotate. The main strap, while being wrapped around the handles and the form, draws the sliding bar *D*, along as the handles bend. The elongation of the timber and

relief from upset while bending, is given by slowly and continuously turning back the relieving screw *E*.

The combination of the back pressure, with constantly relieving the end pressure, bends the handles perfectly.

At the proper point the break is put down and the pawl catches the ratchet-wheel and holds everything to its place. The harness rods are then hooked on to the lugs at each end of the strap and a wooden brace or stretcher put under it, taking up all the slack of the fastening and holding the handles tight upon the strap, so that not a fraction of the bend is lost. The pawl is then raised from the ratchet-wheel, the handles drop from the form, the key is taken out, and the handles are carried away and left to dry on the strap until the timber is sufficiently set and hardened, that it will retain its proper shape.

Having thus fully described our invention,

What we claim as new, and desire to secure by Letters Patent, is—

1. The handle-strap, composed of the parts *e r i s*, harness rod *T*, and straining block *V*, all constructed and arranged as shown and described, and for the purpose set forth.

2. The handle-strap *e r i s*, in combination with T-head *F*, strap *c*, the former *B*, and key *G*, all constructed, combined, and arranged as shown and described, for the purpose specified.

JACOB WOODBURN.

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Witnesses:

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