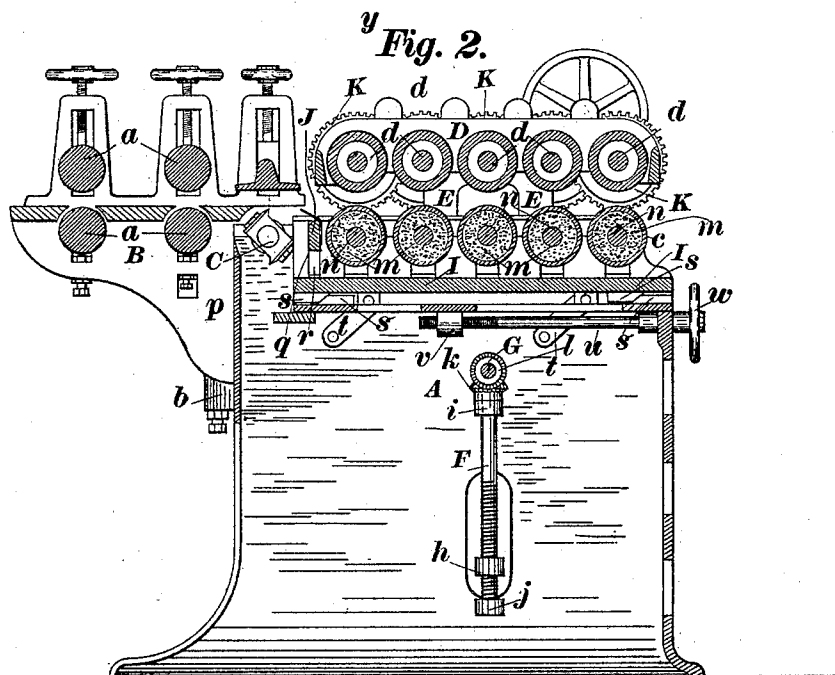
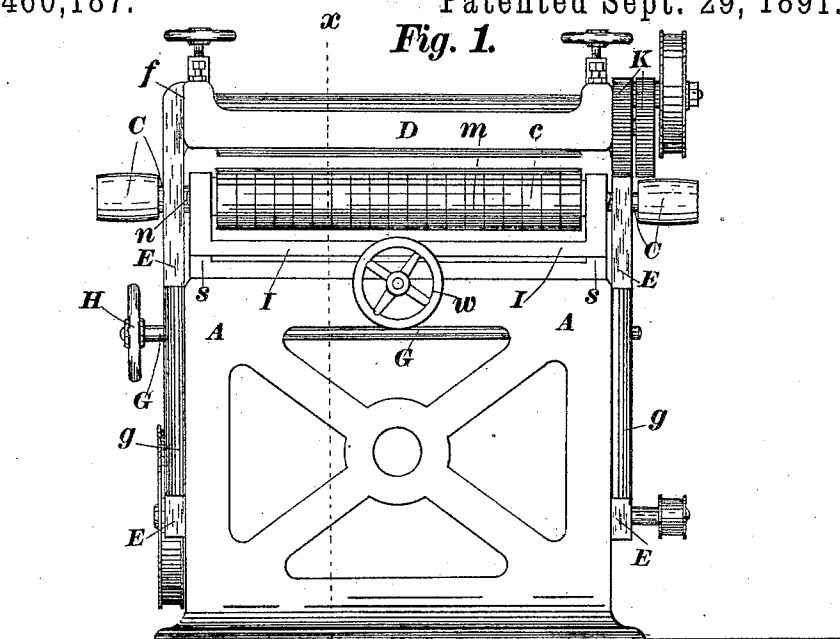


J. SORENSON.
PLANING MACHINE.

No. 460,187.

Patented Sept. 29, 1891.



Witnesses

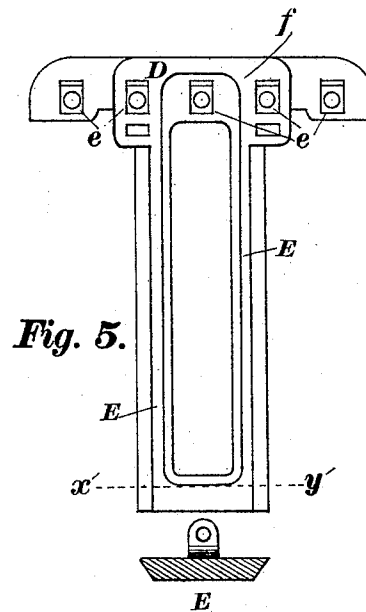
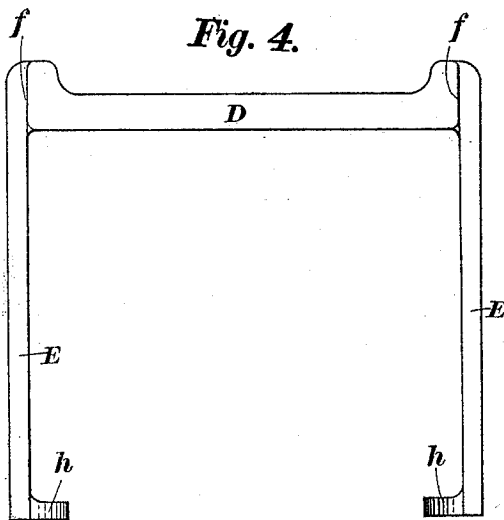
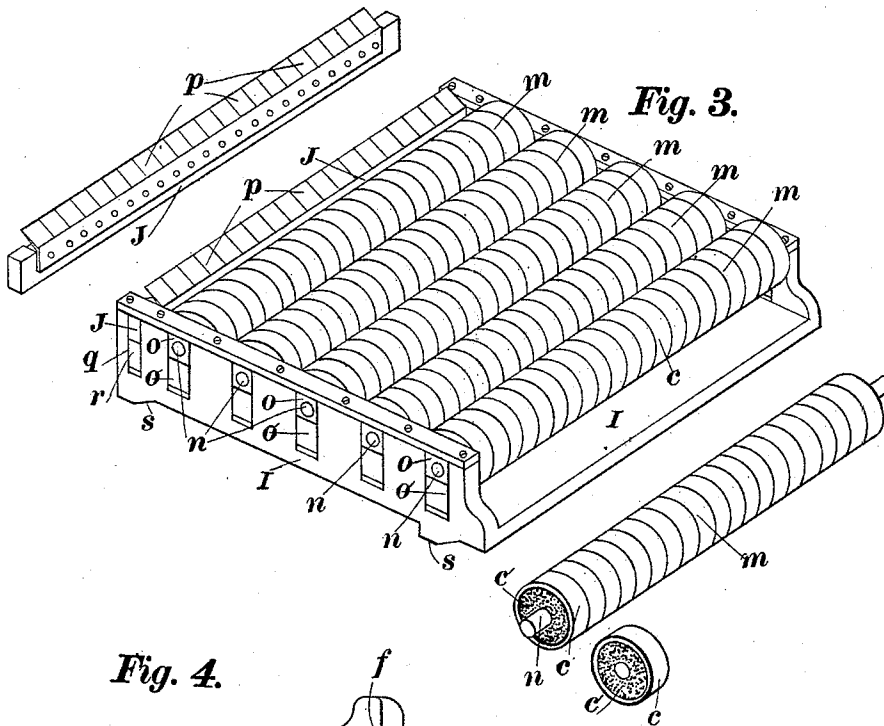
Andrew Manning
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Inventor
Joseph Sorenson
By His Attorney Oscar Snell

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UNITED STATES PATENT OFFICE.

JOSEPH SORENSON, OF CHICAGO, ILLINOIS.

PLANING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 460,187, dated September 29, 1891.

Application filed April 5, 1890. Serial No. 346,756. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SORENSON, a subject of the King of Sweden and Norway, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Planing-Machines, of which the following is a specification.

My invention relates to improvements in that class of planers which is intended to plane both the warp and wind out of the material being worked, so that the machine is adapted to a greater variety of duty than planers of the ordinary construction.

One of my objects is to combine with a rotary cutting head or cylinder operating below the material being planed a compressible bed-plate, which receives the lumber to be planed before it contacts with the revolving knives. This compressible bed-plate, being so constructed that it will readily yield over every part of its surface which contacts with the lumber, thus holds the lumber in its original shape and at the same time permits the upper feed-rolls to force it against the revolving knives, which level its under surface. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front or feeding-in end perspective view. Fig. 2 is a vertical longitudinal view on line $x y$, Fig. 1, showing some parts in section and others in perspective view. Fig. 3 is a view of one combination of parts for a compressible bed-plate, together with detached views of one of the compressible rollers at the right side of drawing and a detached view of compressible pressure-bar shown at the left side of drawing. Fig. 4 is a front view of the frame and side supports for carrying the front upper feed-rollers. Fig. 5 is a side view of Fig. 4 and an end section on line $x' y'$ of the projections of the frame, which secure it to the main frame of the machine, as will be described.

Similar letters refer to like parts throughout the several views.

It will be understood in the description of this machine that the improvement consists in the application of a compressible bed-plate, which is situated in front of the cutting-knives and can be varied in construction to conform to the conditions necessary to apply

it to several varieties of planing-machines. The one illustrated and hereinafter described, being best adapted to the purpose, is shown to illustrate the principle better than many other combinations that have been tried.

In the drawings, A shows the usual frame of a planer. B shows an addition to frame A, which supports the rear system of feeding-out rolls a , Fig. 2. These rollers, and especially the upper ones, are rigidly or unyieldingly secured in relation to each other and to the planer-head, so that after the end of a piece of timber has been operated upon by the planer-head it will be clamped between the feeding-out rolls or between a rigid bed-plate and the rigid rolls above it, as the case may be, and will be held in that position until the entire length of the piece of timber has passed over the planer-head in the same plane in which it entered in between the feeding-out rolls, irrespective of the passage of the warped or uneven portion over the elastic surface of the feeding-in end of the planer. This addition B is hinged to the main frame A at one side b , so that frame B can be swung around out of the way, and thus expose the under rotary cutter-head C, so that the knives can be easily taken off or replaced when necessary, the device shown being a common expedient to planers having a lower cutter-head.

In Figs. 4 and 5 at D is shown a frame for holding the upper series of front feed-rolls. The head of the frame D has five rolls d shown; but either more or less can be used. These rolls are journaled in boxes e at each end, Fig. 5. Secured to the frame D at f are two downwardly-projecting side pieces E, which, when in operative position, straddle the main frame A, one on each side, Fig. 1, and fitted to slide vertically between dovetailed lugs g , Fig. 1.

In Figs 2 and 4 are shown lugs h , which project into the interior of frame A through a slot shown. One of these lugs is shown at the lower end of the side pieces E in Fig. 4. There is a vertical shaft F, Fig. 2, which is threaded at the lower end and is journaled in two lugs i and j . The threaded portions of shafts F operate in a threaded hole in lugs h of side pieces E, one on each side of the machine. At the top end of shaft F is a miter cog-wheel k , which engages a miter cog-wheel l , which is secured to a

horizontal shaft G, Figs. 1 and 2. Shaft G is journaled across the main frame A and has a hand-wheel H, by which it is operated, Fig. 1, and by this means the frame D, together with its feed-rolls *d*, can be raised and lowered to and from the compressible bed-plate to admit either thin or thick material to be planed, as will now be explained. The compressible bed-plate is shown in isometric perspective in Fig. 3 and consists of several rollers *m*, which consist of a central shaft *n*, upon which is a number of metal rings *c*, filled with a good quality of elastic rubber *c'*. The detached view of the sections of the roller is shown in Fig. 3, right-hand side.

The ends of the shafts of the rollers *m* are journaled in boxes *o*, which boxes are fitted to move in vertical slots in the upwardly-projecting sides of the base-plate I. Under each box *o* is a piece of rubber *o'*, which acts as springs and resists to a degree any ordinary downward pressure upon the rollers *m* and their boxes *o*.

At J is a pressure-bar, which is composed of a bar upon which is secured a steel spring having its upper edges split into a series of teeth *p*, all of about the same length. The outer front ends of these teeth *p* stand at the same level as the upper surface of the rollers *m*. The pressure-bar J is held in position at each end by being fitted to a vertical slot *q*, and the ends rest upon rubber springs *r* at the bottom of slot *q*, and thus it will be seen that not only the contact-surface with the lumber being planed of both the rollers *m* and the spring-teeth *p* of the pressure-bar J is compressible, but also the journal-boxes *o* and the ends of pressure-bar J rest upon rubber springs. The whole body of the rollers and pressure-bar can sink at one or both ends to suit any great pressure that may be brought to bear upon them by the uneven surface of any material which may be worked.

The base-plate I has four inclined planes *s*, one near each of its four corners, and these inclined planes rest upon the face of four other inclined planes *s'*, which have a place upon the sides and upper face of a longitudinally-sliding plate underneath the base-plate I. The base-plate I is held from direct longitudinal movement by means of four links *t*, attached one near each inclined plane *s*. The threaded shaft *u* through its hand-wheel *w* acts to move the slide with its inclined planes *s'* longitudinally of the machine, which causes the base-plate I, together with its bed of rollers *m*, to rise or fall, as required. This means, as is well known, is in common use to accomplish the purpose named, and therefore I do not claim it.

In Fig. 2 is partially shown a number of cog-wheels *k*, which connect all the upper front feed-rolls. These rolls may be driven or connected to the source of power by any well-known train of gearing. The upper and lower rear feeding-out rolls *a* are also driven by any well-known system of gearing.

The operation of this is the same as any other machine of the class having what is called a "lower cutting-cylinder," with the exception of the compressible bed-plate. Planing-machines which have a solid bed-plate in front and at the rear of the ordinary cylinder cutter-head, when the cutter-head is below the table or bed-plates, are in common use without feed-gearings and are commonly called "hand-planers," and are for the purpose of planing the warp and wind out of stock, which must have a plane surface, such as is required for furniture, patterns, &c. My compressible bed-plate takes the place of the first or front table of a hand-planer, and when the stock is fed in the upper front rollers are held rigid, while any irregularities in the stock force down both the surface and main body of the lower front rollers, and when the stock is fed in far enough to reach the cutters its irregularities are cut away. When the end of the stock reaches the rear bed-plate or table, the rollers *a* hold it in perfect line with the direction it assumed when first contacting with the cutters.

I claim as my invention—

1. A planing-machine having its planer-head below the table, the surface of the table or bed of the machine at the front or feeding-in end of the table being compressible or elastic and the delivery or rear end of the bed being rigid, and rollers above the same rigidly or unyieldingly supported in relation thereto and to the planer-head, whereby the stock is supported in its warped condition in front of the planer-head and held with its planed or straightened surface upon the rigid portion of the bed of the machine, substantially as described.

2. A planing-machine having its planer-head below the table, the surface of the table or bed of the machine at the front or feeding-in end of the table being compressible or elastic and provided with a spring-toothed pressure-bar adjacent to the planer-head and the rear end of the table rigid, substantially as described.

3. In a planing-machine having its planer-head below the table, the combination, with the bed or table, of a bar in front of the planer-head and a steel spring yieldingly secured thereto, having its upper edge split into a series of teeth, substantially as described.

4. In a planing-machine having its planer-head below the table, the combination, with the main frame, of a vertically-movable frame having slots in its side pieces, a bar in the slots nearest the planer-head, having a toothed spring-plate secured thereto, and a series of compressible rollers yieldingly journaled in the remaining slots of the side pieces, substantially as described.

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Witnesses:

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A. A. KATLEK.