

(No Model.)

S. S. HAZELAND.
Wood Planing Machine.

No. 238,684.

Patented March 8, 1881.

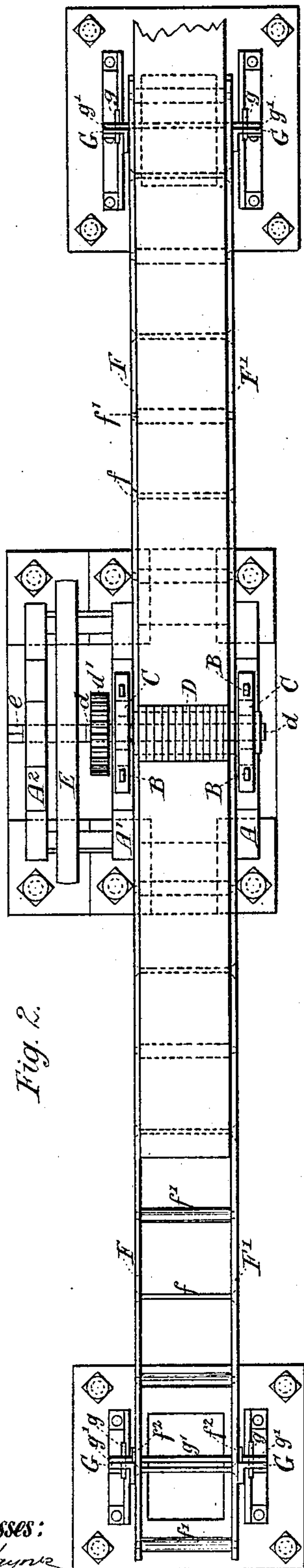


Fig. 2.

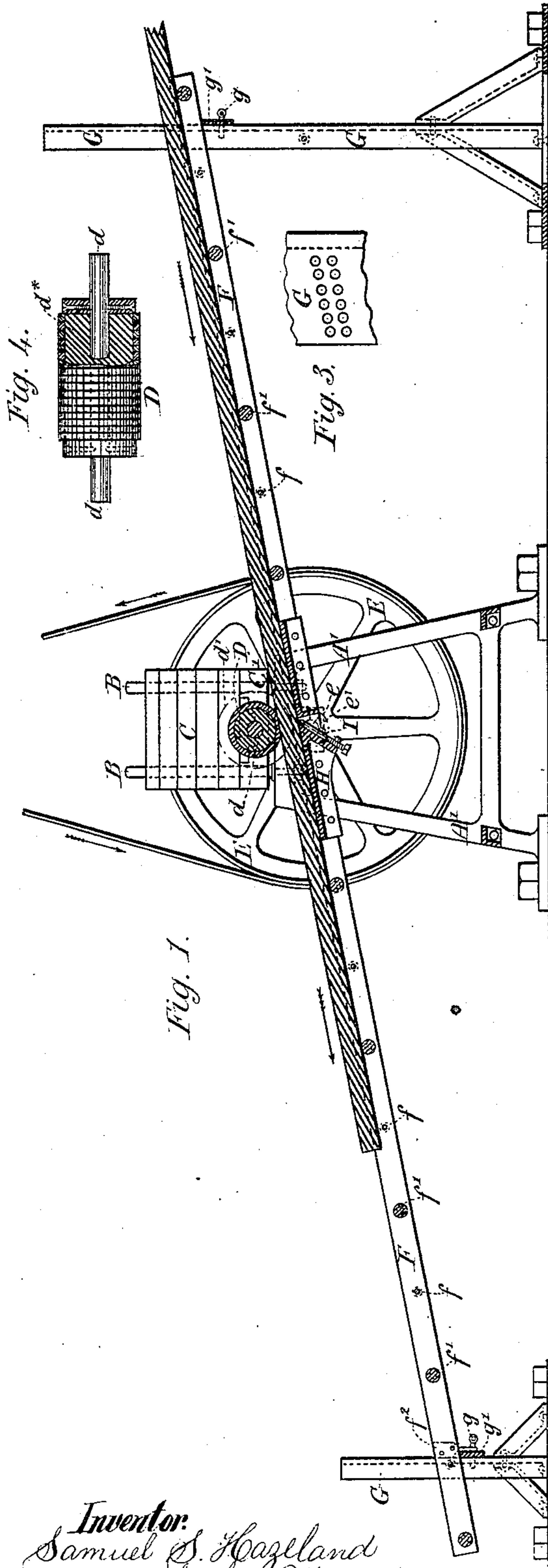


Fig. 1.

Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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WOOD-PLANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 238,684, dated March 8, 1881.

Application filed November 24, 1880. (No model.) Patented in England July 10, 1880.

To all whom it may concern:

Be it known that I, SAMUEL SEARLE HAZELAND, of St. Sampson's, in the county of Cornwall, England, Venetian-blind manufacturer, have invented an Improved Machine for Planing Wood, of which the following is a specification.

The object of this invention is to supply a want long felt for a simple and inexpensive machine to plane wood, and to be driven either by hand or steam power.

To this end I provide a simple and efficient means for holding the work down upon the feeding-table and traversing the work over the stationary knife or plane-blade with which the machine is fitted.

In the accompanying drawings I have shown, in sectional elevation at Figure 1 and in plan view at Fig. 2, a wood-planing machine arranged according to my invention, such machine being intended more especially for heavy work.

A A' A² are three vertical standards, which are securely bolted to a bed-plate and connected together in any convenient manner.

To the top of the standards A A' are bolted vertical rods B B to receive weights C. The lowermost of these weights, C', carries the bearings for the axle of an elastic roller, D. This elastic roller is composed of a spindle or cylinder of metal covered with vulcanized india-rubber, and will be more fully described hereinafter.

Carried in bearings in the standards A' A² of the machine is an axle, *e*, on which is keyed a band-wheel, E, and a pinion, *e'*. This pinion gears into a spur-wheel, *d'*, keyed on the axle *d* of the elastic roller D. By these means the said elastic roller D may be driven at any desired speed. When hand-power is to be employed a winch-handle may be adapted to the axle *e* above mentioned.

F is an open frame or table, supported at either end by vertical standards G. This frame or table, which is intended to support the wood to be planed, is capable of vertical and inclined adjustment by means of pins *g*, which take into holes made in the standards G, passing through the transverse bars *g'*, on which the frame F rests. The holes in the

standards G are so arranged that the height of the table may be adjusted to the sixteenth of an inch, (see the detached view, Fig. 3,) to suit various thicknesses of wood.

The frame or table F consists of a long skeleton frame-work made of two side pieces, F' F', rigidly connected together by tie-rods *f*, and carrying-rollers *f'*, upon which is placed the wood to be planed. The frame or table F also carries, midway of its length, a box or holder, H, in which is bolted or otherwise securely held an adjustable knife or plane blade, I. This frame or table is placed between the standards A A', with the fixed knife I immediately below the elastic roller D, which serves both to hold down the wood on the table and to force it forward over the knife-edge to effect the planing operation.

The arrangement of holes above mentioned in the standards G not only enables the frame containing the knife box or holder H to be so adjusted with respect to the periphery of the elastic roller D that when it is suitably weighted it may exert a gripe upon the wood sufficient to force it over the knife, but it also enables the inclination of the wood to be varied to suit the weight of the wood to be operated upon. Thus for heavy work the inclination will be considerable, and the wood which rests on the carrying-rollers *f'* will materially assist by its own weight the action of the elastic roller D, while for lighter work the frame or table F may be maintained in a horizontal position, the gripe of the roller D in all cases being regulated by the number and size of the weights C, and the position of the wood to be planed being adjusted by means of the pins *g*. The frame is prevented from slipping or being forced forward by means of the stop-pieces *f*². The speed at which the roller D is driven is regulated according to the width of the wood to be cut, the spur-gearing being changed as required. Thus for wood twelve inches wide the speed of the roller D should be about one to four revolutions of the driving-wheel, for six inches wide the speed would be as one to two, while for three inches and under the speed of both would be equal.

The wood to be cut is pushed forward at first by hand until the elastic roller D has ob-

tained a firm gripe thereon, after which it will be carried forward by the rotation of the rollers. To insure a firm hold of the wood by the roller D it is essential to make its periphery elastic. By experience I have found that I am enabled, by the use of an elastic roller formed, by preference, of red rubber, to traverse the wood through the machine and hold it firmly against the planing action of the knife I, thereby greatly simplifying the traverse motion of the work and rendering traversing chains or equivalent gear unnecessary. The roller, which is shown detached and on an enlarged scale at Fig. 4, may consist of a metal cylinder or drum, d^* , over which are strained rings or washers of vulcanized india-rubber—say five-eighths of an inch thick and five-eighths of an inch wide—sufficient in number to make up the required width of roller. The tenacity of this material is such as to insure (when a proper pressure, to be ascertained by experience, is applied to the roller) a firm hold on the wood, sufficient not merely to keep it from rising, but also to force it forward over the knife-edge.

In some cases I may find it desirable to obtain a gripe on the wood both in front and rear of the knife—as, for example, when planing hard wood. In this case I place on either side of the roller D an additional elastic pressure-roller. These auxiliary rollers may be mounted and weighted in the manner described above, or weights may be applied to them by means of rods pendent from them, and they will be driven from the roller D by means of intermediate wheels, as all three elastic rollers must rotate in the same direction. In this arrangement only one knife will be used. It will be understood that a considerable increase in the gripping power will thus be given at the weakest points—viz., just as the wood strikes or leaves the cutter—since the first roller will obtain its full gripe on the wood before the wood strikes the knife, and the last roller will have a corresponding gripe as the wood leaves the blade, and both in addition to the gripe of the roller D.

It may sometimes be desirable to have two knives, arranged one behind the other, in order to take off two shavings at one time. In this case the rollers will be mounted as before described, and placed a short distance apart, and they will be driven from a shaft placed between them, on which the winch-handle or band-wheel is mounted. The two knives will be carried in a suitable box or holder, as before explained.

I am aware that it is old to cover rollers with india-rubber for the purpose of increasing their friction upon any article introduced between them, and I do not claim this, broadly, as my invention.

The essential advantage of the elastic rollers in my machines consists in the fact that they are arranged upon the opposite side of the work from the plane irons or knives, and serve both to press the work against the knives and to feed it forward.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a planing-machine, of a fixed knife or knives adapted to act upon one side of the material to be planed, and an elastic roller or rollers adapted to bear upon the opposite side of said material only, and serving both to press the material against the knife or knives and to feed it forward, substantially as herein shown and described.

2. The combination, with a planing-machine fitted with a fixed knife or knives and an elastic pressing and feeding roller or rollers, of an adjustable frame or table for supporting the wood and varying its inclination, substantially as and for the purpose herein shown and described.

The 21st day of October, 1880.

SAMUEL SEARLE HAZELAND.

Witnesses:

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