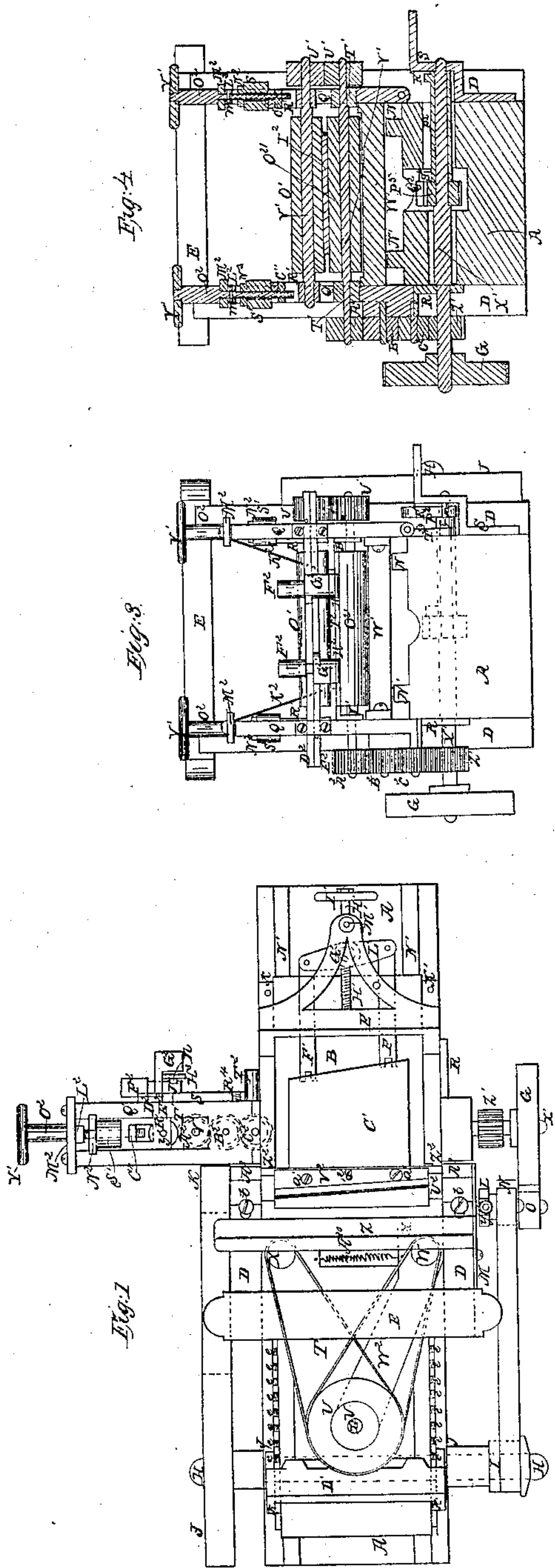


H. D. Storer,

Wood Planing Machine.

No 29,923.

Patented Sep. 4, 1860.



Witnesses:
A. M. Darnell.
J. L. Arnold

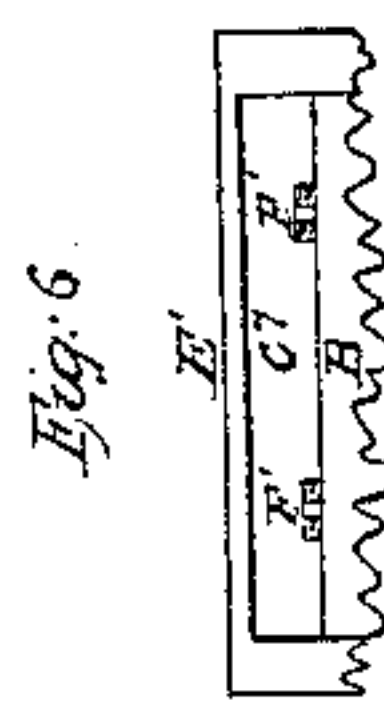


Fig. 6

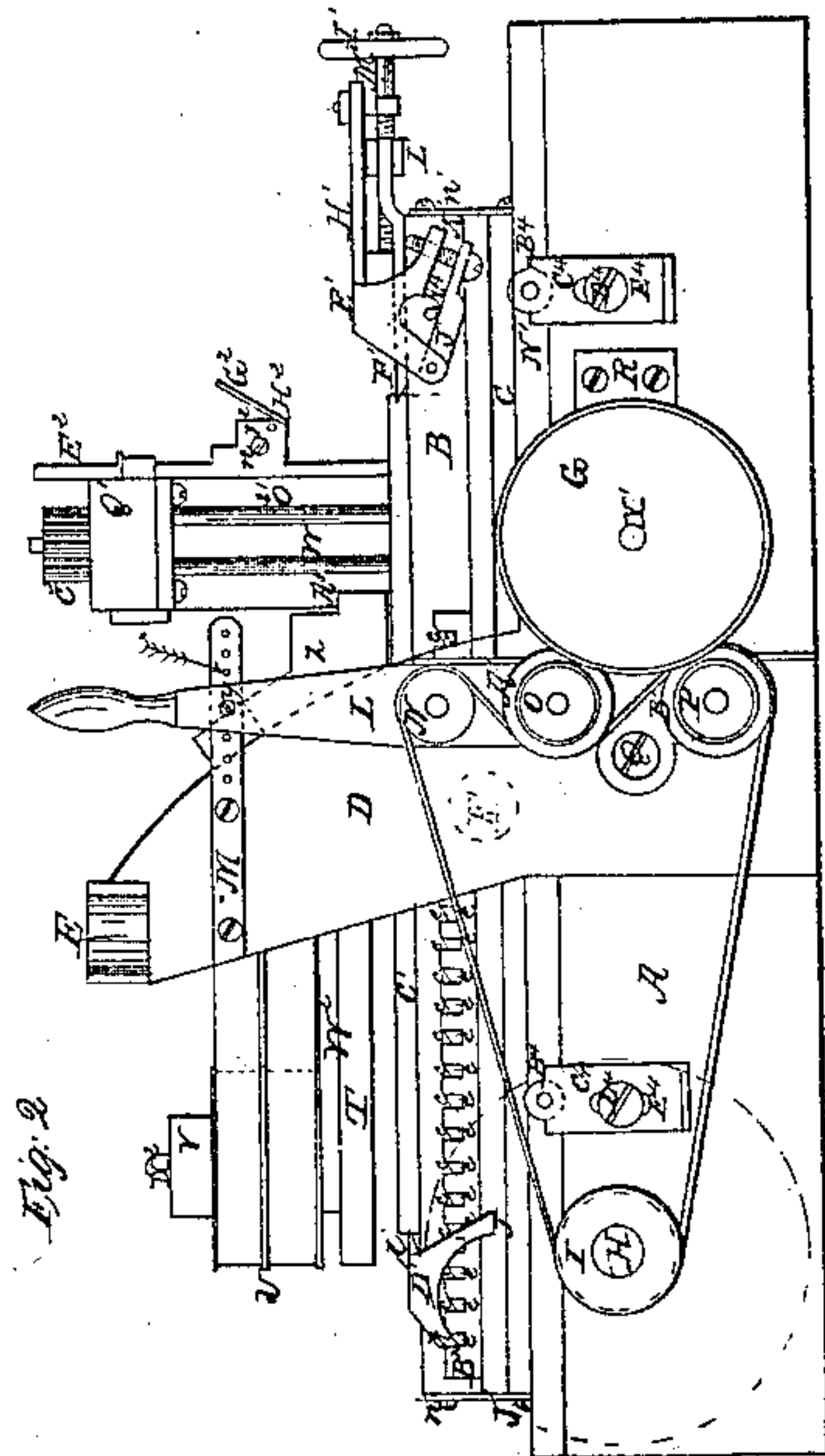
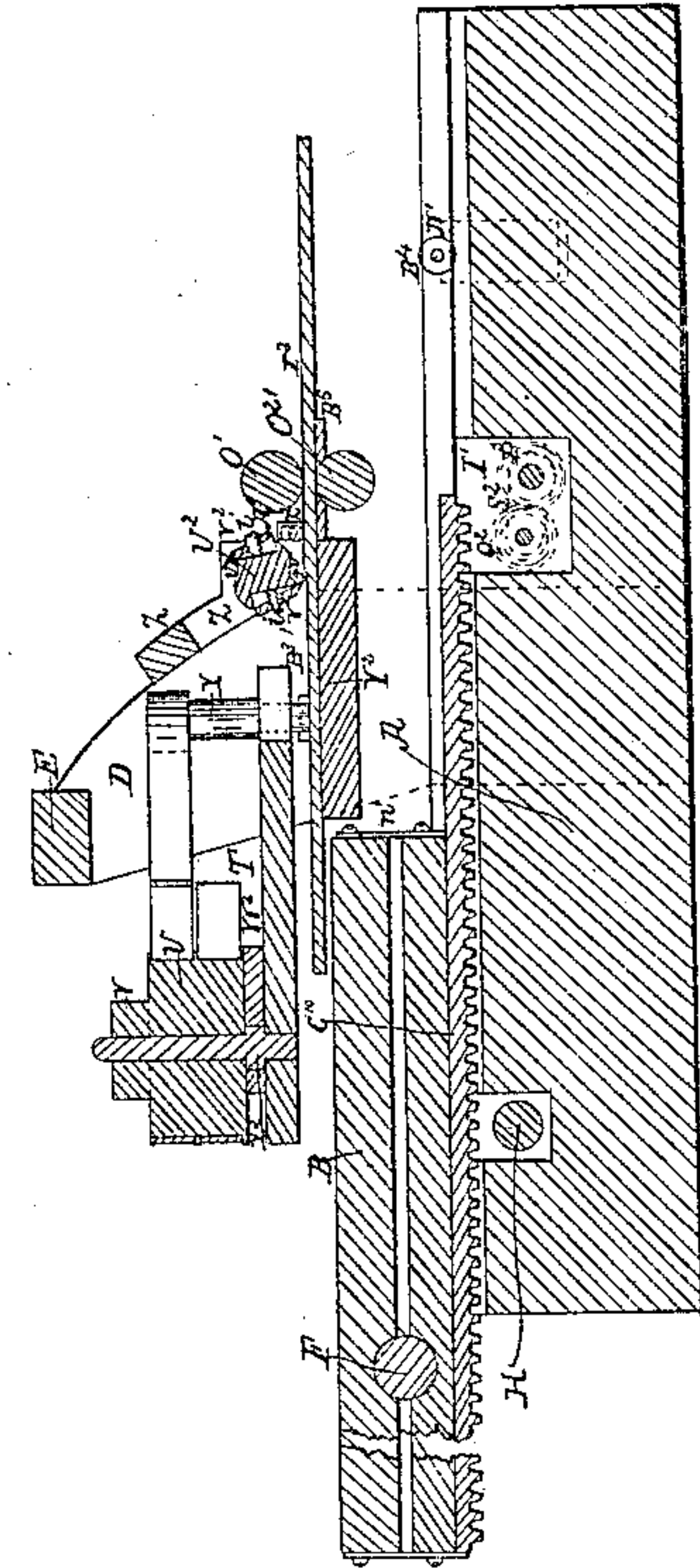


Fig. 2

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UNITED STATES PATENT OFFICE.

HENRY D. STOVER, OF NEW YORK, N. Y.

PLANING-MACHINE.

Specification of Letters Patent No. 29,923, dated September 4, 1860.

To all whom it may concern:

Be it known that I, HENRY D. STOVER, of the city, county, and State of New York, have invented a new and useful Dimension Planing-Machine for Dressing Lumber; and I hereby declare that the following specification, in connection with the accompanying drawings and references thereon, constitute a lucid, clear, and exact description of the construction and use of the same.

In referring to the drawings, Figure 1, denotes a plan or top view of my machine as used for dressing dimension lumber. Fig. 2, a side elevation of the same. Fig. 3, a front end elevation with platen removed, and feed rolls in operation, with cutter head for surface dressing boards. Fig. 4, a transverse and vertical section of the same, through the center of feed rolls, and other connected parts, when the feed rolls are in operative position. Fig. 5, a longitudinal and vertical, and central section; with feed rolls also in operative position. Fig. 6, a front end of one part of dogging apparatus, and the top platen in part.

The nature of my invention consists, first, of a dogging apparatus having adjustable incline planes so operating against corresponding pieces attached to the platen, that any desired pressure, by the adjustable incline planes, may be had to press the dogs forward into the lumber, and down on to the platen, by turning a single screw; also, in the combination of revolving nut, transverse bar carrying the dogs, and guide bar for guiding both the dogs straight ahead, or nearly so, by the turning a single screw, so that they will both always enter the end of the board whether it be square or angular, with equal pressure; also, in so constructing the cutting cylinder, that the blades may be bolted flat to the central part; and still impart a shearing or drawing stroke to the lumber; also, in so constructing the cutting cylinders that the cutting blades may be moved to, or from the axis of the cylinder, and its central part back of the cutting edge being shaped like a cap, to the ordinary plane iron, the tipping of the blade constituting this cap shaped portion of the cylinder, an adjustable heel, for causing the blade to cut smooth over knotty and gnarly wood, and at the same time remove a light or heavy

chip; also, in so combining the roll, and platen feed that, by the simple act of throwing one out of feed, it will throw the other into feed and vice versa; also, in so constructing the feed roll boxes that they carry their own pressure within them, and so as to be moved up and down by a screw; also, in making the platen in two parts with a ball between so that the top part may be tipped and secured, universally in any position so that a piece may be planed tapering, any, and every way if desired; also, in forming mouth pieces or openings between the teeth of the solid dogging racks to prevent shavings and chips lodging and clogging therein.

Construction.—To enable persons skilled in the art to which my invention appertains to construct and carry out the same, I will describe it as follows.

I construct a bed piece of wood, seen at A, to the top I secure tracks or ways seen at N'. I also provide rollers seen at B⁴, and made adjustable by stands C⁴, to which they are attached by studs, on which they freely revolve. The periphery of each roller B, may be raised, and secured by screws D⁴, and slots E⁴, in stands C⁴, so as to receive the entire weight of the platen, to move easily upon them. The platen is made of two main parts seen at B, and C, with a ball F, between, and keeping the two at a distance apart. This ball allows the top platen B, to be tipped or canted in any direction, and be secured by straps n', and screws, or otherwise. The advantages of a level platen, and a universally inclinable one, in the same machine and altogether, are obvious. It requires but a moment's time to adjust it for planing level and parallel, or for any, and every, taper desired.

Two standards seen at D, are firmly secured on each side of the bed piece A, and additionally secured at their top by a cross plate E. The drive shaft is seen at H, secured so as to revolve in bed piece A, the drive wheel being seen at J. The front edges of standards D, above platen B, are shaped a curve, described from the axis of the drive shaft H. This allows the drive belt to be of uniform tension at whatever elevation the cutter head may be, which the belt drives.

The cutter head U² is suspended to freely

revolve in the frame Z, which may be moved up, or down, on the curved edges of standards D, and secured by screws *t*, Fig. 1. Cavities, seen at *r*, Fig. 5, are formed in the central part of the cutter head U². These cavities allow the cutting blades V² to be tipped on the edges or caps *v*, by the screws *i*', and *a*', the latter holding the blades V², firmly to the central part U², and the former stopping them in any desired position. By this arrangement the edge *v*, is made an adjustable cap which is of the greatest importance in planing both hard, and soft, knotty, and gnarly, wood. A thin edge can be given the blades and they set as near the outer revolving line as possible. In this position, soft wood will be dressed in the best manner. For hard wood the blades must not be ground so thin, as for soft wood, and their back edges set nearer to the central part U², the exact position being determined by the kind of hard wood being worked, the cap *v*, changing its relation with the blades as the latter are tipped, which makes the caps exactly what are wanted in all cases. The blade's edges should be a little crowning to dress the board level transversely.

A pressure roll Z², Figs. 1 and 5, is placed just forward of the cutting cylinder and its downward pressure given it by rubber spring *r*', Fig. 5, which is held in cavities by caps A³, Figs. 1, 2, and 5.

I construct a matching apparatus to be used with the platen, as follows: A stand seen at T, is secured to the posts D. To this stand a stud X², is secured on which revolve the drive wheel V, and belt wheels U, for driving the cutters B³, Fig. 5, by band around their pulleys W, and X, Fig. 1, one or both of these cutters may swing laterally and are kept against the edges of board by spring A¹⁰, Fig. 1, they being guided by pin or roller Y, shown in dotted lines Fig. 1. Thus by communicating power to drive wheel V, the matching cutters are put in motion to match the board at the same time it is being dressed.

The dogging apparatus at the rear end of the platen consists of two cast iron bars B¹⁰, with projections *c*, at suitable intervals to receive the back catches *k*, of the dog D', while its forward ends *j*, hook under the lower edge of racks or bars B¹⁰, so that by simply tipping up the back edge of dog D', it may be readily slid along, back or forth, and dropped down into the desired position, and is then ready for use, cavities seen at *e*, are formed between the projections *c*, to prevent accumulation and clogging of dirt, dust, chips, and shavings.

The forward dogging apparatus consists of an iron frame E', a portion of each side being projected down, to which the adjustable incline planes J', Fig. 2, are hinged, the

other end of these planes being raised or lowered by screws K', properly threaded to suitable projections on the frame E'. Pins or surfaces A⁴ Fig. 2, are firmly secured to the top B, of the platen, against which the incline planes receive support when the lumber is being dogged. I construct a screw seen at H', which turns in stand M', and at its point by, or in another bearing not shown. This screw has a balance wheel I', attached firmly to its outer end, by which it is turned, the screw not moving lengthwise, but only revolving. A revolving nut G', Fig. 1, is fitted to this screw and carries a swinging cross bar L', each end being connected to a dog F', which enters and holds the lumber, these dogs being guided at their forward ends by cross bar C', Fig. 6. Thus by this arrangement, and turning the single screw H', the dogs are forced forward and into the piece, regardless of whether it is square or angular, and at the same time by giving the incline planes J', the desired pitch, the dogs are held down and forward with great firmness, and this pitch can be instantly changed by simply turning screws K', up or down, to accommodate the pressure or squeeze to any piece desired to be planed.

A gear rack C¹⁰ is secured to the under side of platen C, which may project forward for running the platen back out of the way when the feed rolls are to be used. The feed consists of a shaft X', suspended in two stands R and S, secured to each side of bed A. A pinion P⁵, is secured firmly to shaft X', and between it and stand S, a swinging sleeve P² is fitted so as to turn freely thereon, the inner end of which has a projection S², which carries pinion Q², meshing into and driven by pinion P⁵. The outer end has also a projection R⁴, positioned at a different angle so that when the roll frame Q', is thrown up, it strikes the projection R⁴, lowers it, and raises pinion Q² directly into gear with rack C¹⁰, and platen B, and when the rolls hereafter described are brought down into use, the pinion gear Q², drops from rack C¹⁰, as will be readily seen.

A friction wheel G, is secured to shaft X'. Back of this I hinge a lever L at the point Q. To this lever I attach three belt wheels N, A', and B', the last two having friction pulleys O and P, which with wheel G, are all covered with leather. A suitable belt from pulley I, on drive shaft H passes around and communicates motion to pulleys A', and B', which carry the friction pulleys O, and P. Near the upper end of lever L, I secure a bar M firmly to standard D, which has several holes *a*, made in it, for the lever L to catch and hold by its pointer *y*, shaped on the outside like a screw head. Thus if a heavy load is upon the platen B, it can be

very easily and gradually started, by pressing the lever L, so that friction pulley O, will press upon wheel G until fairly started then let the catch y spring into one of the
 5 holes a, and the platen will run as long as may be desired. To reverse the movement, move the lever L in an opposite direction, so that pulley P, will press upon wheel G. If
 10 no movement is wanted of platen B, place the lever L, so that neither pulley O, nor P, will touch wheel G.

I construct a frame of iron, seen at Q' and W'. To each side of this frame I fit a lower box T', in which revolves, the lower
 15 feed roll O²¹, on its shaft V'. Above these boxes I fit another at each side of the frame seen at R', which are constructed so as to carry the upper feed roll O' by its shaft V'. These boxes R' have each a cavity formed
 20 through them, in which a nut C'' freely slides vertically but not to turn around. These nuts receive the screws O², having a wheel Y' to turn them and which turn in caps M², and are prevented from rising by
 25 collars L² and pins m. Below the collars L², I place a cap nut N², which also is threaded to screws O², and slides freely up and down, but cannot turn. Between this cap nut and the top of boxes R', I place a
 30 cylinder or piece of india rubber S', which is compressed to any desired pressure by turning down cap nuts N², then put all together, as seen in the drawing, and the pressure downward on roll O', is always the
 35 same, whether the roll O', is high or low, and its vertical movement does not materially change its pressure, as the screws O², move the cap nuts N', and boxes R' precisely alike, the rubber S', being between
 40 and constituting the pressure for the feed roll O'. The board I² pressing up the roll O' raises boxes R' up against the rubber S', and leaving the nuts C'', to slide as before stated.

45 The rolls O' and O²¹ are connected in movement, by pinion gears U', and at the opposite end of lower feed roll shaft V' a gear A² is secured, by which motion is communicated to drive the rolls O' and O²¹ by
 50 stud gears B² and C², drive gear Z', secured to the shaft X', so that by simply lowering the frame Q' the roll feed is connected, and the platen feed disconnected, and by the act of raising the frame Q' the platen feed is
 55 connected and the roll feed disconnected.

An iron platen B⁶, is firmly secured to frame Q', at about the height, and on a line with, and either side of top portion of lower feed roll O²¹, over which the board passes
 60 through the machine. This platen may extend under the cutter head U², or one made on purpose seen at Y², and secured to standards D, the top of course always being of the same height. It is not practical to use

the platen B, with feed rolls O' and O²¹, because it frequently requires refacing and consequent lowering and would of course be constantly out of line with feed rolls. 65

Matching cutters or heads seen at J², Figs. 1 and 2, are secured to revolve in sliding
 70 bars D² and E², which may be placed on either side of rolls O' and O²¹, so that a board of any ordinary width can be readily thrust between the guides G², and the guides H² and matching cutters J² are both kept
 75 up by springs K², to the edge of the board to follow and match it correctly, regardless of its taper, or the direction it may run through.

Figs. 1 and 2 show my machine with its
 80 platen only in use, and Figs. 3, 4, and 5, show the feed rolls in use. To change the platen, to the roll feed, run the platen back by the machine, as indicated in Fig. 5, place in the platen Y², lower the feed rolls,
 85 and all is ready. To change to platen feed, reverse the operation, all as herein shown.

I claim:

1. Constructing that part of the dogging apparatus E', carrying the dogs F', with
 90 adjustable and variable inclined planes J', pressing against pins or surfaces A⁴ attached to the platen B, so that any desired pressure, by the adjustable planes J', may be given, both to press the dogs forward
 95 into the lumber, and hold them securely down to the platen, by the turning of a single screw H', essentially in the manner described.

2. The combination of the downward
 100 drawn guide bar C', with the dogs F' cross bar L' and revolving nut G' substantially in the manner and for the purpose set forth.

3. The employment of flat cutters beveled on their outer surface, and parallel to the
 105 axis of the cutter head; the cutting edges being in the surface of a cylinder whose axis is coincident with the axis of motion, so as to impart a drawing stroke substantially as set forth. 110

4. The combination of the cutting cylinder U² formed with recesses r and pressure edge v, with the peculiarly constructed cutters V² and the devices by which they are
 115 adjusted upon the cutter head and secured thereto, substantially as specified.

5. So constructing, arranging and combining the parts constituting the roll feed—
 i. e.—the shaft X', pinions A², B², C² and Z' or their equivalents, and the platen feed—
 120 i. e. shaft X', lever sleeve P², arms R⁴ and S², and pinions P⁵ and Q², that by the act of lowering the rolls to be used its feed is connected and the platen feed disconnected; and by the raising of the rolls the feed is con-
 125 nected with the platen substantially as set forth.

6. Making the platen in two parts B and

C, with a ball F between, so that the top part may be tipped universally, and secured by straps *u*, or otherwise, in any position, so that a piece may be planed level and parallel in thickness, or tapering as set forth.

5 7. So constructing the feed roll boxes R' that they carry the pressure within them

so as to be invariable under any elevation of feed roll substantially as described.

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Witnesses:

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