

(No Model.)

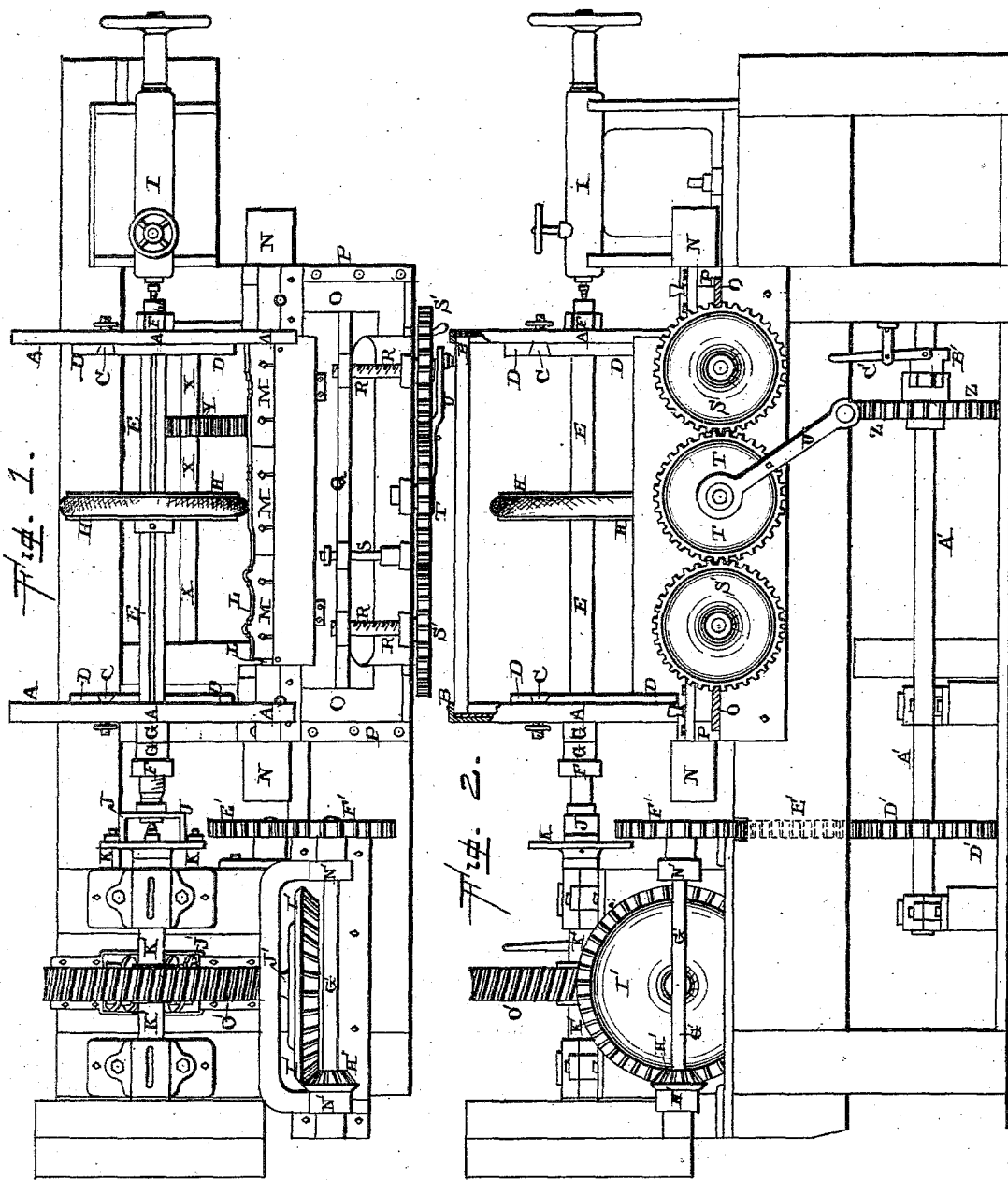
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J. PLEUKHARP.

MACHINE FOR PLANING POLYGONAL BODIES.

No. 296,448.

Patented Apr. 8, 1884.



- Witnesses -
Louis F. Gardner
A. S. Patterson.

- Inventor -
Jas. Pleukharp
per
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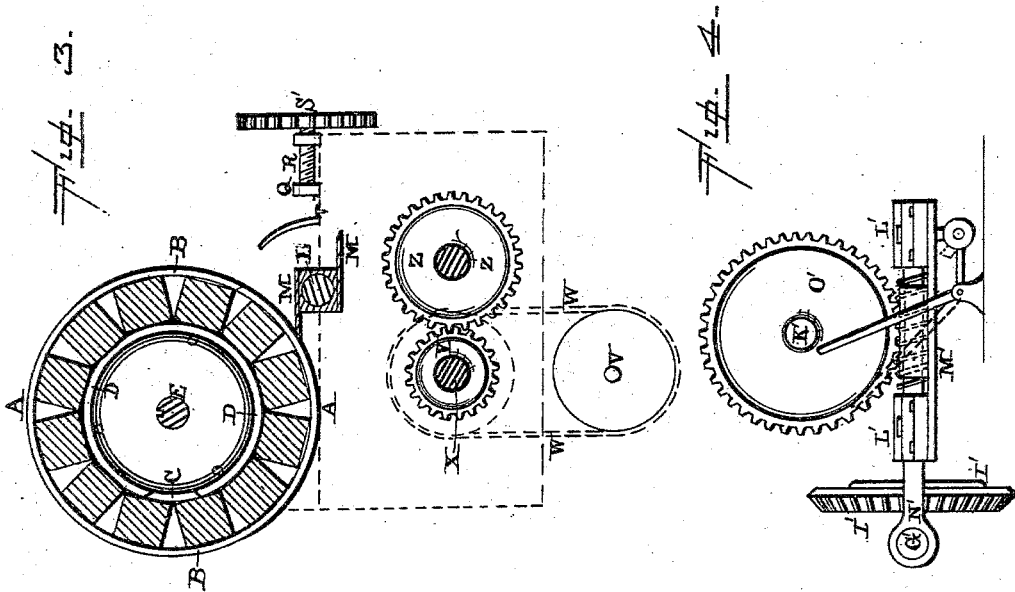
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UNITED STATES PATENT OFFICE.

JAMES PLEUKHARP, OF COLUMBUS, OHIO.

MACHINE FOR PLANING POLYGONAL BODIES.

SPECIFICATION forming part of Letters Patent No. 296,448, dated April 8, 1884.

Application filed September 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES PLEUKHARP, of Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Machines for Planing Polygonal Bodies; and I 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in machines for planing polygonal bodies; and it consists—

First. In a planing-machine, the combination of the slowly-revolving clamping-heads and a rapidly-revolving planer with a mechanism for adjusting the planer back and forth, and a stop which is connected with the adjusting mechanism for limiting the distance the planer shall be moved. The object of this part of my invention is to provide a means for preventing the planer-head from being moved forward beyond a certain point, and thus have all of the work of a uniform size.

Second. In the combination of a suitable driving mechanism with a beveled cog-wheel having secured to it a screw-shaft, which meshes with a worm-wheel, which is secured to the main driving-shaft, the screw-shaft being placed in boxes so as to be vertically adjustable, and thus allow it to be thrown in and out of gear with the worm-wheel. The object of this part of my invention is to disconnect the slow feed by which the clamping-heads are slowly made to revolve, and enable a rapid motion to be given to the driving-shaft for the purpose of enabling the planed work to be sandpapered after it has been finished by the planer-head.

Third. It still further consists in the arrangement and combination of devices, which will be more fully described hereinafter.

Figure 1 is a plan view of a machine embodying my invention complete. Fig. 2 is a side elevation of the same. Figs. 3 and 4 are detail views of the same.

A represents two clamping-heads, in which pieces of lumber to be planed are placed. Each of these heads has a flange, B, formed upon

its inner side, and against the inner side of this flange the outer edges or corners of the pieces of lumber which are to be planed into any desired shape are held. One of these heads is made wider than the other, so as to form a deeper recess in one head than the other, and thus allow each piece of lumber an endwise movement before it has been clamped in place, and after the clamp is removed, and thus enable each piece to be freely inserted in between the heads or removed whenever so desired. The pieces of lumber to be turned are placed in between the two heads A, and form a circular body similar to the staves of a barrel, and these pieces are then made to revolve slowly in front of the cutter-head, as will be more fully described hereinafter. Each of these heads is provided with a split or divided clamping-ring, D, of any desired diameter, according to the thickness of the piece of lumber, and against the outer circumference of these clamping-rings the inner sides of the pieces of lumber to be planed are made to bear. These rings are elastic, so that when the expanding devices C, of whatever kind are used, are forced inward, the rings contract, and when the expanding devices C are forced in between the ends of the ring the rings are made to expand sufficiently to clamp the pieces of lumber tightly against the flanges B of the heads. As here shown, the expanding devices are formed of wedge-shaped pieces, which have a screw-shank connected to them, and upon these screw-shanks are placed suitable thumb-nuts or wheels, by which the wedge-shaped pieces can be forced back and forth between the ends of the parts D. These clamping-rings D are supported in position against the inner sides of the head A by means of pins, which extend outward from the sides of the heads; but I do not limit myself to any particular means either of holding the rings in place or to the kind of expanding devices used, for these may be varied at will. The rings D serve as supports for the inner sides of the ends of the pieces of lumber, and to clamp the pieces of lumber against the flanges B on the heads A. These heads A are placed upon the shaft E, which is grooved, as shown, and each head can be adjusted back and forth upon the shaft inde-

pendently of the other. By means of this adjustment pieces of lumber of different lengths can be held between the heads. Each end of the shaft E is made screw-threaded, as shown, 5 and upon each screw-threaded end is passed a nut, F, by means of which the heads A are made adjustable back and forth in relation to each other. Suitable collars, G, may be passed over the end of the shaft between the nut and 10 the outer side of the head, so that the heads can be moved in any desired relation to each other without the necessity of making the screw-threads beyond a very limited length. Secured to this shaft E, at or near its center, 15 by means of a suitable set-screw or other fastening device, is a supporting-wheel, H, which has a rubber tire or band applied to its outer surface for the purpose of forming a soft cushion or support for the pieces of lumber. This 20 wheel H serves to support the pieces of lumber at their centers, and thus prevent any vibration while they are being turned. This shaft E is supported at one end by an ordinary lathe-head, I, or any other suitable support 25 that may be preferred, and at the other end by means of a face-plate, J, which has a square opening through it, so as to receive the square end of the shaft, and thus cause the shaft E to revolve when the face-plate J is made to 30 revolve by means of the device K, by which it is attached to the shaft K'.

The planer-head L, to which are clamped by bolts, in the usual manner, the adjustable 35 slotted cutter-plates M, receives its motion from the pulleys N, which in turn receive their motion from a suitable counter-shaft which runs under the floor. This counter-shaft is not shown, for it is an ordinary shaft, 40 which may be placed in any desired position to the machine. The plates M will have their cutting-edges shaped according to the kind of work which is to be done. This cutter-head will be made to revolve at about four thousand revolutions per minute, while the heads 45 A, carrying the pieces of lumber to be planed, will revolve about once in three minutes, and in the same direction. In order not only to give this planer-head a gradual cut, but to adapt it to work of different sizes, the head 50 and its shaft, with the pulleys N, are placed upon suitable slides, O, which are held in position upon the frame by the keepers or bosses P, which catch over their top edges, as shown in Fig. 2, and thus cause the slides to move 55 evenly and true. For the purpose of adjusting this planer-head back and forth, there is a vertical flange, Q, formed upon the top of the slide, and through this flange are passed the screw-shafts R and the stop S. The two screw-shafts R are secured to the gear-wheels S, 60 which mesh with and are controlled in their movements by the idler T. To this idler T is secured a handle, U, so that when the handle is turned all three of the wheels S'T' are made 65 to revolve, and thus cause the screw-shafts R to move the slide back and forth upon the

frame, and thus move the planer-head nearer to or farther from the revolving heads A. The stop S will be provided with a nut upon one end and suitable washers upon its inner end, 70 so as to limit the movement of the slide; but I do not limit myself to this construction of parts. There may be a series of holes made through this stop S, through which pins may be passed; or it may be made screw-threaded 75 from one end to the other, and then be provided with nuts which can be adjusted back and forth at will. These stops, striking against opposite sides of the flange Q, will prevent the head from being moved either too far back or 80 too far forward.

As above stated, while the cutter-head is in motion it makes about four thousand revolutions a minute, while the heads A revolve in the same direction, but only about once in 85 three minutes. This slow movement of the lumber and rapid movement of the cutter-head enables the head to plane the outer edges of the pieces of lumber smoothly and evenly, and to do all of the work that is to be done upon 90 them entirely by machinery, and thus avoid the necessity of any hand-planing. As will readily be seen, a very great saving of time and skilled labor is effected by this construction, for an ordinary unskilled workman can 95 readily adjust the pieces of lumber in between the heads A and then slowly turn the handle U, so as to feed up the cutter-head as far as the stop S will allow. When this has been done, and the heads have made one complete 100 revolution, the outer sides of the pieces of lumber have been planed, and there is nothing further to be done to them except to sandpaper them off. Where pieces of lumber have been clamped in between the revolving heads, 105 and then have had to be planed off by hand, a skilled workman is necessary, and the work is neither as accurate nor as complete and perfect as when done entirely by machinery, as 110 in this case.

Underneath the floor is a counter-shaft, V, from which passes a belt, W, which communicates motion to the shaft X, which extends 115 along under the machine. Upon this shaft X is placed the pinion Y, which meshes with the loose gear Z, which is placed upon the shaft A', which runs parallel with the shaft X. The wheel Z is placed loosely upon the shaft; but can be connected thereto at any time by means 120 of the clutch B', which is moved by the lever C'. While the heads A are being made to revolve slowly, this clutch B' is thrown in gear with the wheel Z, and the wheel Z is then made to revolve with the shaft A'. When, however, 125 a rapid movement is to be given to the heads A for the purpose of sandpapering the outer side of the planed pieces of lumber, this clutch B' will be thrown out of gear with the wheels E, and the heads will no longer receive their slow motion from the shaft X. At the same 130 time that the clutch B' is thrown out of gear the worm-gear must be disconnected, as will

be more fully described hereinafter. Upon this shaft A' is a second gear-wheel, D', which meshes with an idler, E', and this idler in turn meshes with the gear F' upon the shaft G'.
 5 Secured to this shaft G' at the opposite end from the wheel F' is a small bevel-pinion, H', which meshes with the large bevel-wheel I', as shown. This wheel I' has secured rigidly to it the screw-shaft J', and this shaft J' and
 10 the wheel I' are journaled in suitable boxes, L', which are secured upon the top of a plate, M'. This plate M' is supported at one end by means of the supports N', which catch over the shaft G' upon opposite sides of the wheel I'. By
 15 this construction it will readily be seen that the wheel I' and its screw-shaft J', together with their boxes, are journaled upon the shaft G', so that the outer end of the screw-shaft J', together with its boxes, will have a rising and
 20 falling movement, as shown in Fig. 4. The object of thus pivoting this screw-shaft J' with its bearings upon the shaft G' is to give the shaft a vertical play, for the purpose of throwing it in and out of gear with the worm-wheel
 25 O, which is secured upon the shaft K'. When the shaft J' is in gear with the wheel O, and the clutch B' is in gear with the wheel Z, the heads A receive their motion entirely from the shaft X, and thus have only a slow movement.
 30 When, however, the planer has done its work, and it is desired to sandpaper the pieces of lumber which have been turned upon their outer sides, it is necessary that the heads A should receive a rapid motion. For this purpose the shaft K' is provided with a fast and
 35 loose pulley to receive the belt from a counter-shaft placed in any desired relation to the machine. When this driving-belt is moved upon the fast pulley, the shaft K' and the heads A
 40 are given a rapid motion, so that the pieces of lumber can have the sand-paper applied to them for the purpose of finishing them. While this sandpapering is being done, the planer-head must be moved back out of contact, so that the cutters will not be injured by
 45 the sand. Formed around this screw-shaft J' at any point is an oil-box, so that the shaft will revolve in oil and keep it and the wheel O'

always well lubricated. After the pieces of lumber have been planed on one side, they are
 50 removed from the heads, turned one-quarter around, and then replaced, when another side is ready to be planed.

The shaft J' may be thrown in and out of gear with the worm-wheel by the devices shown
 55 in Fig. 4, or any similar one, for this may be accomplished in many ways.

In the head A, having the wide flange, will be inserted a suitable band or piece of rubber, which will serve to allow pieces of lumber of
 60 slightly different lengths to be clamped between the heads, without the shorter pieces having any endwise movement.

Having thus described my invention, I
 65 claim—

1. In a planing-machine, the combination of the slowly-revolving heads A, between which the pieces of lumber are clamped, and rapidly-revolving planer-head L, the wheels S' T, screws R, the slide in which the planer is journaled, and the stop S, the slide being provided
 70 with the flange Q, substantially as shown.

2. In a planing-machine, the combination of the two heads A, between which the pieces to be planed are clamped, the planer L, located
 75 to one side of the heads, and a mechanism for causing it to rapidly revolve, and suitable intermediate shafts or gearing located under the frame for driving the heads with a slow motion, with the short shaft G', pinion H', wheel
 80 I', screw-shaft J', and worm-wheel on the main shaft, for communicating the motion of the intermediate shafts or gearing to the heads, substantially as described.

3. The combination of the heads A, provided
 85 with the flanges B upon their outer edges, the expansible rings D, which are applied to the inner sides of the heads, and the screw-operated wedges, which are placed between the ends of the rings, substantially as shown.
 90

In testimony whereof I affix my signature in presence of two witnesses.

JAMES PLEUKHARP.

Witnesses:

F. A. LEHMANN,
 CHAS. PLEUKHARP.