F. L. LANE.

MATCHING PLANER HEAD.

APPLICATION FILED SEPT. 26, 1910.

1,036,862.

Patented Aug. 27, 1912.

2 SHEETS—SHEET 1.

Fig. 1

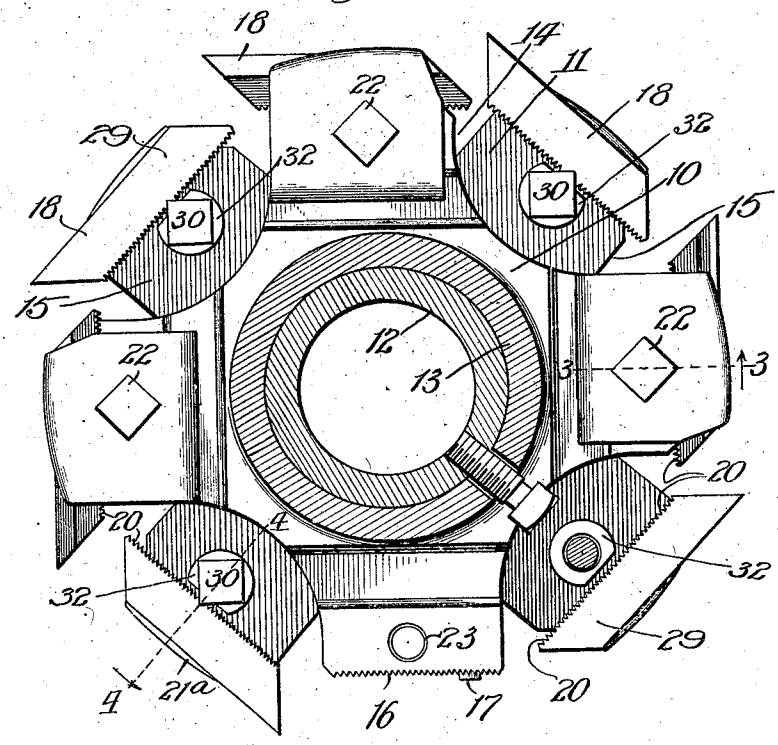
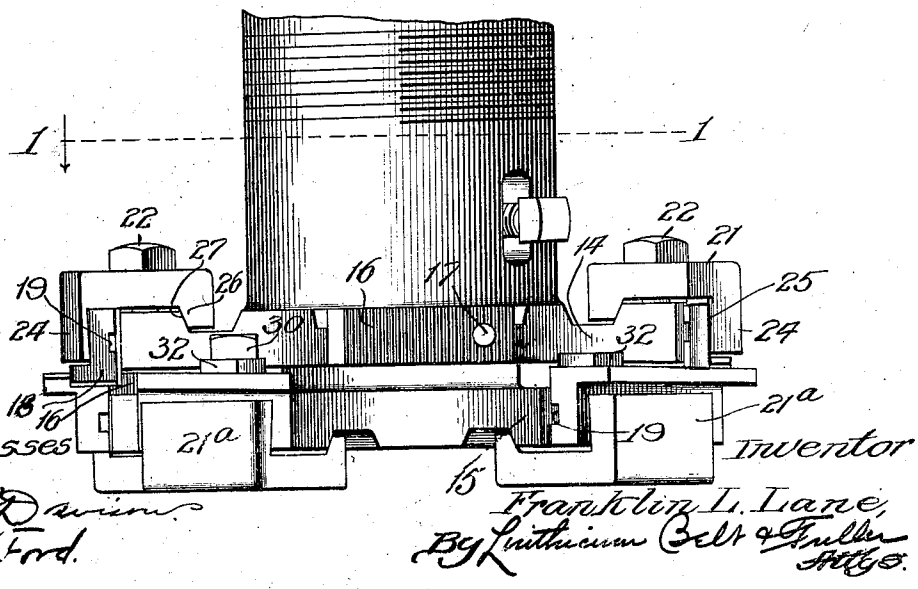


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3

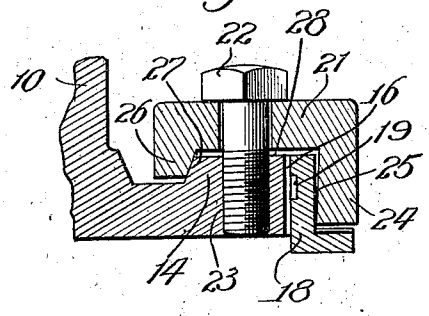


Fig. 5

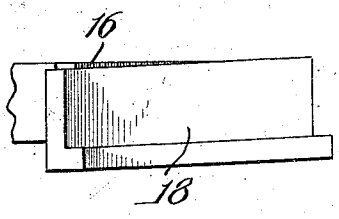


Fig. 4

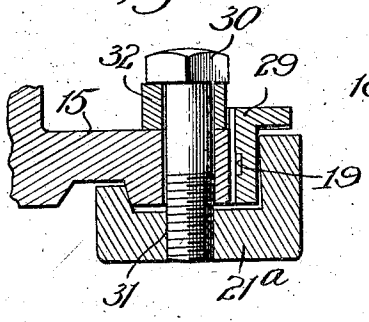


Fig. 6

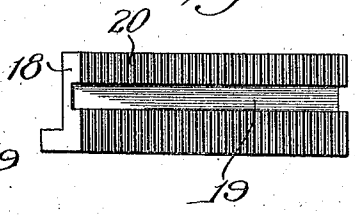


Fig. 7

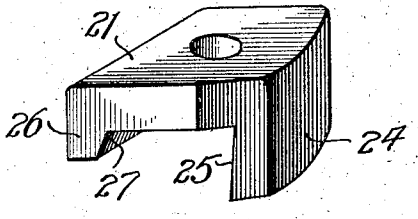
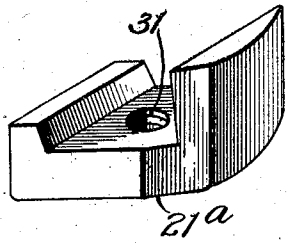


Fig. 8.



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UNITED STATES PATENT OFFICE.

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MATCHING PLANER-HEAD.

1,036,862. Specification of Letters Patent. Patented Aug. 27, 1912.

Application filed September 26, 1910. Serial No. 583,764.

To all whom it may concern:

Be it known that I, FRANKLIN L. LANE, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Matching Planer-Heads, of which the following is a specification.

One of the features of this invention is the securing of planer knives in operative position with proper clearance by means of simple, inexpensive and efficient holding or clamping means.

In order that those skilled in the art may have a full and complete understanding of this invention, I have illustrated a desirable embodiment of the same in the accompanying drawings forming a part of this specification, the invention being shown in such drawings in connection with a matching planer head, although it is to be understood that it is susceptible of use in many other similar relations.

In the accompanying drawings, Figure 1 is a horizontal section on the line 1—1 of the matching planer head shown in elevation in Fig. 2, some of the parts being omitted for the sake of clearness of illustration; Fig. 2 is a fragmentary side view of a matching planer head equipped with my improved knife holding means, parts being omitted; Fig. 3 is a fragmentary section on the line 3—3 of Fig. 1; Fig. 4 is a similar section on the line 4—4 of Fig. 1, through the lower part of the matching planer head; Fig. 5 is a face view of one of the knives and a part of the holding device; Fig. 6 is a back view of the knife shown in Fig. 5; and Figs. 7 and 8 are perspective views of the clamping or securing members of the holding construction.

The matching planer head shown in these drawings consists of two vertically adjustable parts 10 and 11, having the two telescoping hubs 12 and 13 respectively, adapted to fit over an upright shaft not shown. The means for adjusting these two members toward and from each other it is unnecessary to illustrate and describe because they are well understood in the art. The two members 10 and 11 are each supplied with a plurality of radially extended arms 14 and 15 respectively, each of such members in the present instance being equipped with four arms, the two sets of which are angularly offset with relation to each other, as is clearly indicated in the sectional plan view of Fig. 1, so that the various knives will cut in series. The outer flat face of each of the arms 14 of the member 10 is serrated at 16, that is, is provided with a considerable number of small V-shaped teeth extended longitudinally of the axis of the member and near one end of such face, the arm is supplied with a short outstanding cylindrical guide pin 17. Each of the grooving knives 18, which are extended beyond and adapted to be fastened to the ends of these outstanding arms, is grooved longitudinally at 19, such groove being of substantially the same width as the diameter of the pin 17, and the inner face of each of these knives is serrated or provided with a plurality of small V-shaped teeth 20, adapted to interfit with the teeth 16 of the face of the arm, to hold the knife in proper position to give the desired clearance. In order to tilt or incline these knives slightly as shown in Fig. 5 and as is necessary to secure the clearance, the teeth or serrations 20 are slightly diagonally disposed with relation to the axis of the knife, so that when the knife is held against the arm 16 it will be inclined or canted to a small extent, as is clearly shown. The pin 17 acts by coöperation with the groove 19 to assist in properly placing the knife in position; that is, it acts as a guide in clamping the knives in place, so that all will be held in the same position with respect to vertical displacement.

Obviously, some means are necessary for holding each knife in place against the end of its arm 14, and to accomplish this I provide each knife with a clamping member 21 held on the arm 14 by a screw 22, the threads of which coöperate with those of a hole 23 extended through the arm. Along its outer edge the member 21 has a depending flange 24, with a beveled or under-cut surface 25 which contacts with the outer face of the knife only near the center or lower portion of the same; that is, it engages that part of the knife doing the greatest amount of cutting and which is subjected to the greatest amount of strain. The other edge of the clamping member 21 is supplied with a depending wedge flange or rib 26, which co-acts with the beveled or wedge surface 27 of a raised portion 28 at the end of the arm. It should be clear therefore,

that as the screw 22 is tightened, the clamping member is forced downwardly and inwardly, due to the inter-action of the parts 26, 27, thereby drawing inwardly against the knife, the beveled flange 24, acting to hold the knife securely and fixedly against the end of the arm so that displacement or dislodgment of the knife is impossible. The arms 15 of the lower planer head member 11 are much like those of the upper arms 14, with the exception that the parts are reversed, the lower grooving knives 29 being held in place against the serrated ends of the arms 15 by similar clamps 21ª which, however, are used in reversed position as is shown in Fig. 4 and are adjustable by means of the screws 30 passing through the arms 15 and engaging threaded holes 31 in the clamps themselves, a washer 32 being preferably employed between the head of each screw and the top face of the arms.

To those skilled in this art it will be apparent that the knife holding means illustrated and described will maintain the knives firmly and fixedly in operative position owing to the wedge action of the clamping means used. It will furthermore be obvious that as the knives become worn down by grinding, they can be advanced along the serrated faces of the outwardly extended arms and used for a considerable period of time. Furthermore, it is an easy matter to adjust all of the knives to the same position, it being merely necessary to have due regard to the same inter-engagement of the teeth on the arms and knives, the guide pins 17 acting to hold the knives against vertical displacement during the tightening of the clamping means.

Although I have shown grooving knives for matching planer heads in use in the constructions illustrated in the drawings, it will, of course, be readily understood that knives for providing tongues on the edges of boards may be as readily held in place by these same means as are the grooving knives. By the employment of this improved means all of the knives are given the desired amount of clearance which is uniform for all knives and the latter may be canted or inclined from the axis of the head predetermined amounts without measurement, by merely observing the proper interlocking of the teeth of the ends of the arms and those on the inner faces of the knives. By employing a construction of this character, the knives may be ground down a considerable amount without destroying the efficiency of the holding means herein set forth.

I do not wish to be restricted to the precise structural features herein set forth in connection with this invention because they may be changed within wide limits without sacrificing any of the substantial benefits of the invention and without departure from the essence thereof.

I claim:

1. The combination of a planer head having teeth, a planer knife having teeth interengaging with those of the head, coöperating means on the head and knife for grinding the knife when the latter is moved transversely to the teeth in positioning the same, and a clamping member embracing a part of the head and at least a part of the knife to hold the same together.

2. A rotary cutter head having a substantially radial arm provided upon its outer extremity with a set of transversely disposed teeth, a knife blade provided with a set of teeth interfitting with the teeth of the arm, one of said sets of teeth being obliquely disposed, means to secure the knife blade detachably to the arm, and a guide for use in positioning the knife blade, said guide including interfitting parts on the knife blade and the arm, substantially as described.

3. In a construction of the character described, the combination of a planer head having a plurality of teeth, a planer knife having a plurality of teeth adapted to mesh with those of the head, one of said sets of teeth being disposed slightly diagonally, means to clamp the knife in the canted position determined by said inter-meshing teeth to secure clearance, and pin and groove guiding means for said knife, substantially as described.

4. The combination of a planer head having teeth thereon, a planer knife having teeth interengaging with those of the head, complimentary guiding means on the head and knife, and a clamping member embracing a part of the head and at least a part of the knife to hold the same together.

5. In a construction of the character described, the combination of a planer head having a plurality of teeth, a planer knife having teeth adapted to mesh with those of said head, one of said sets of teeth being disposed slightly diagonally to maintain the knife canted sufficiently for clearance, a clamp for said knife having a wedge engagement with said head, and means to tighten said clamp, substantially as described.

6. In a construction of the character described, the combination of a planer head, a planer knife, a U-shaped clamp for said knife having a flange over-lapping the latter and undercut so as to form an engagement with the knife less in extent than the over-lapping of the knife by the flange, and means to tighten said clamp, substantially as described.

7. The combination of a planer head and a planer knife, said head and knife having interengaging teeth arranged to hold the

knife slightly canted, a clamp having a portion overlapping a part of said head and having a flange overlapping at least a portion of the knife, said flange being undercut on the side which engages the knife.

8. In a construction of the character described, the combination of a planer head having a plurality of teeth, a planer knife having a plurality of teeth adapted to mesh with those of the planer head and maintain said head canted sufficiently for clearance, pin and groove guiding means for said knife, a clamp for said knife having a wedge engagement with said head and having a flange adapted to bear against said knife, said flange being beveled on the face adapted to contact said knife, and means to tighten said clamp, substantially as described.

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Witnesses:
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