No. 718,061. PATENTED JAN. 6, 1903.

S. R. WAGG.

REFINING ENGINE.

APPLICATION FILED MAY 12, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

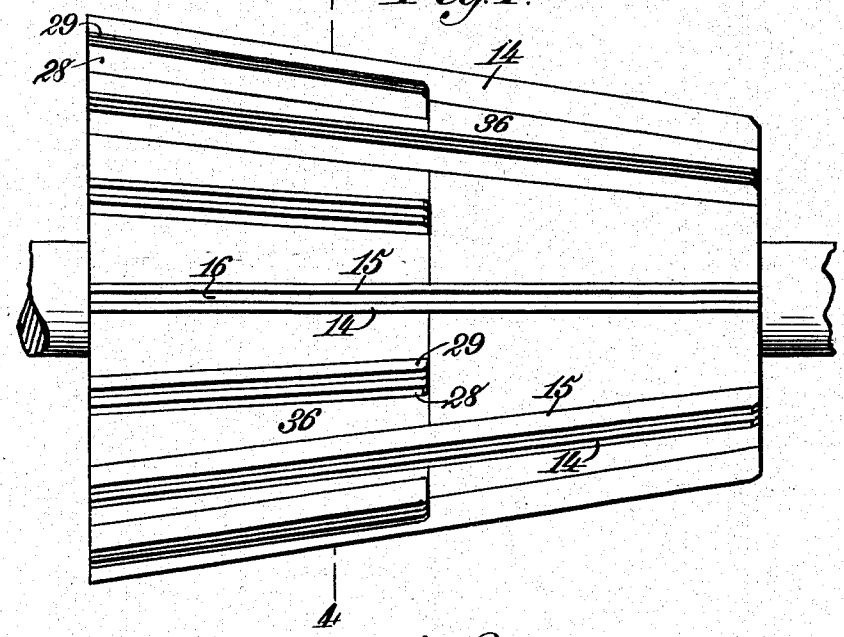
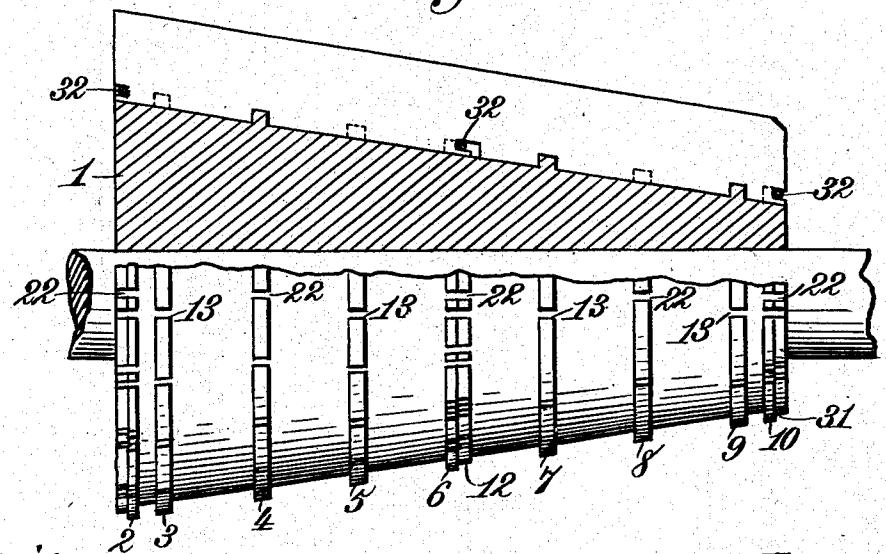


Fig. 2.



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NO MODEL. APPLICATION FILED MAY 12, 1902. 2 SHEETS—SHEET 2.

Fig. 3.

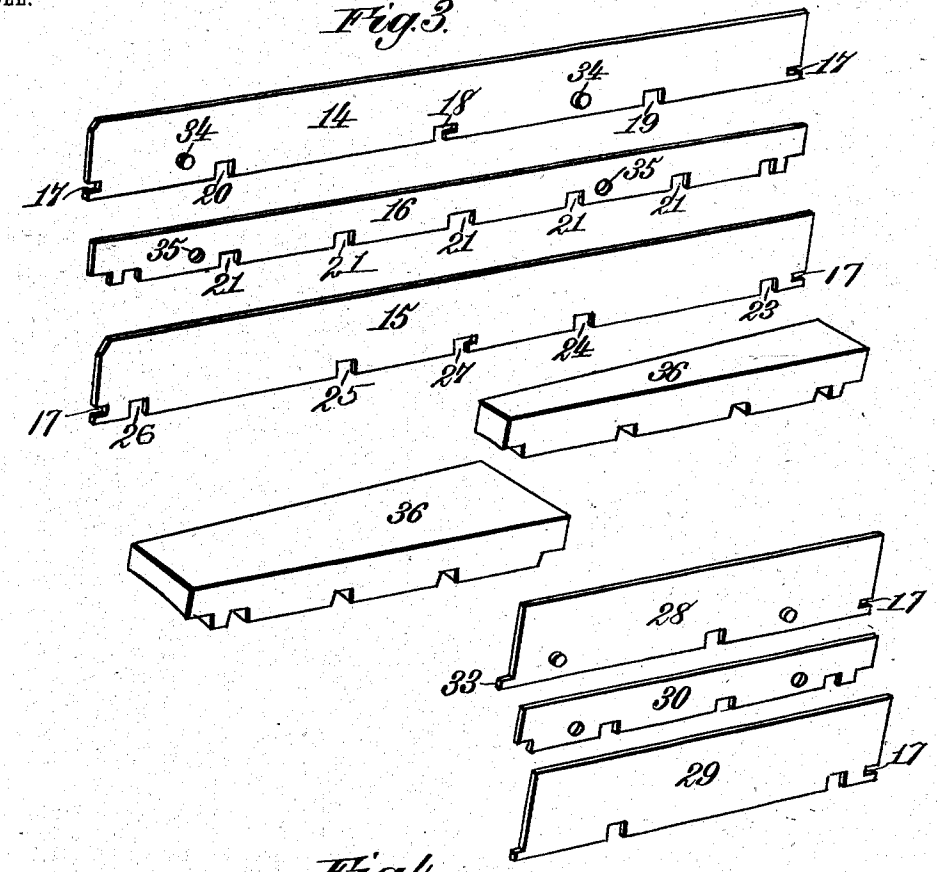
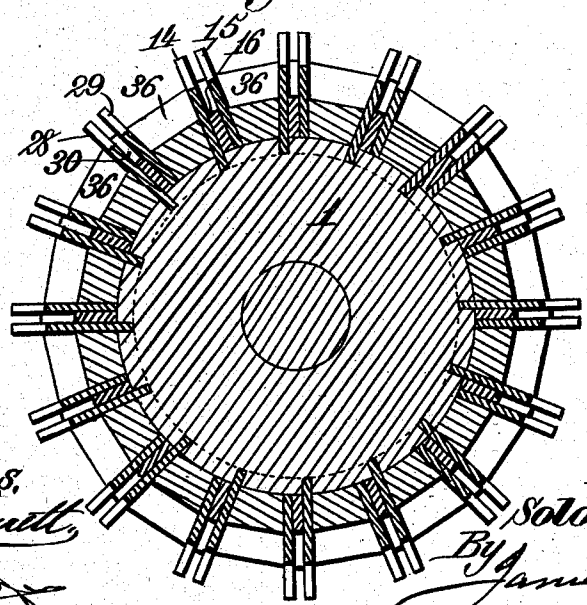


Fig. 4.



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UNITED STATES PATENT OFFICE.

SOLOMON R. WAGG, OF APPLETON, WISCONSIN.

REFINING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 718,061, dated January 6, 1903.

Application filed May 12, 1902. Serial No. 106,939. (No model.)

To all whom it may concern:

Be it known that I, SOLOMON R. WAGG, a citizen of the United States, residing at Appleton, in the county of Outagamie and State of Wisconsin, have invented new and useful Improvements in Refining-Engines, of which the following is a specification.

My invention relates to certain new and useful improvements in refining-engines of the type in which the blades are arranged about the plug of the engine in groups of two or more blades each, and has for its object a novel manner of securing the blades about the plug, whereby said blades shall be held and braced firmly in position and the structure shall possess great strength and power of resistance.

In order that my invention may be clearly understood, I have illustrated the same in the accompanying drawings, wherein—

Figure 1 is a view in elevation of the plug with the blades arranged thereon in accordance with my invention. Fig. 2 is a view in sectional elevation of the plug, the blades being removed. Fig. 3 is a perspective view showing in detail the respective blades, filling-strips, and wedge-blocks employed on the plug; and Fig. 4 is a cross-sectional view on the line 4 4 of Fig. 1.

Referring to the drawings, 1 indicates the plug of an ordinary Jordan engine having arranged around its periphery at suitable intervals from end to end thereof a series of annular projections or rings, (indicated, respectively, by the numerals 2, 3, 4, 5, 6, 7, 8, 9, and 10.) Said rings will preferably be cast integral with the plug. Nothing novel is claimed for the plug as thus far described. My invention resides in the peculiar arrangement of grooves or recesses in the rings and in the blades to be secured about the plug, as will now be described.

Referring to Fig. 1, it will be seen that there are two rings at each end of the plug located relatively close together and designated, respectively, by the numerals 2 3 and 9 10. The central ring 6 is also provided on one side—that is, toward the smaller end of the plug—with an annular shoulder 12 of less height than the ring and the purpose of which will presently appear. Starting at a given point, the rings 2, 3, 5, 6, 7, 9, and 10 will be provided with a groove 13, which grooves will be in alinement and are of a width to receive snugly one of the blades of the engine.

Referring now to Fig. 1, 14 indicates one of the blades of a group of two blades, 15 the other of said blades, and 16 the interposed filling-strip. These parts when assembled constitute what I term a "compound bar," and said bar forms one of a series of bars which extend from end to end of the plug. The blade 14 is provided with end recesses 17 about centrally of its length in its bottom edge with a bayonet-recess 18, and between the latter and each end with a recess 19 and 20. When in position, the bottom edge of said blade will fit in the grooves 13 and the recesses 19 and 20 in said blade will fit over the respective rings 4 and 8. The filling-strip 16 is now to be placed adjacent to the blade 14, and to this end said strip is provided on its bottom edge with a series of recesses 21, which are so disposed as to fit over the various rings of the plug. The rings 2, 4, 6, 8, and 10 are provided with grooves 22 in alinement, and the blade 15 is now placed adjacent to the filling-strip 16. To this end the said blade is provided in its bottom edge with a series of recesses 23, 24, 25, and 26, respectively, and about centrally of its length with a bayonet-recess 27. The recesses 23 to 26 are so disposed as that when the blade is in position the recess 23 will fit over the ring 3, the recess 24 over the ring 5, the recess 25 over the ring 7, and the recess 26 over the ring 9, allowing the edge portion of the blade to fit down into the grooves 22. The ends of the blade 15 are provided with the end grooves 17 in the same manner as the blade 14, and this is true of all the blades of the plug, the short blades, hereinafter described, having only one of said end grooves, as said blades terminate at the center of the plug.

From the foregoing description, taken in connection with the illustration, it will be seen that with the exception of the middle and end rings the two blades 14 and 15 do not in any case both fit in a recess in the same ring—that is to say, the ring 3 has a groove 13 to receive the blade 14 and the blade 15 has a recess 23 to fit over said ring. On the other hand, the ring 4 has a groove 22 to receive the

blade 15 and the blade 14 has a recess 19 to fit over said ring. The purpose of this construction is to avoid weakening the structure by having only a small portion of the metal of the ring between each two blades to resist the strain to which the blades are subjected, as would be the case if each ring were cut through to provide grooves for both blades in each group. In like manner a group of short blades is arranged on the plug, said group comprising the blades 28 29 and the interposed filling-strip 30. Both the blades of this group, and, in fact, all of the blades, long and short, cut through the central ring 6 and the two end rings 2 and 10, which end rings are provided on their outer sides with annular shoulders 31. The purpose of providing the end rings and the central ring of the shape described and of having each blade seat in a recess therein and of having the long blades provided with a central bayonet-recess and the end recesses is to permit said blades to be securely held to the plug by means of iron bands 32, which are inserted in the end recesses 17 and the central bayonet-recesses 18 and 27, respectively, and seat on the annular shoulders 12 and 31. The short blades terminating at the ring 6 have no recess 17 at their inner ends, but instead a projection 33 on the end of the blade extends into the groove in the annular shoulder 12, and the band 32 passes over and rests on the upper edge of this projection.

In order to more securely hold the various filling-strips in position, I may provide one or more pins 34 on the side of one of the blades in each group, which pin will pass into a hole 35 in the filling-strip when the same is inserted sidewise into position. Between each set of blades a wedge-block or filler 36 is inserted as usual, and it will be understood that the whole surface of the plug will be filled with alternate groups of long and short blades in the same manner as just described with reference to one group of each of such blades.

While I have shown the blades arranged in groups of two blades each, it will be understood that the groups may consist of more than two blades without departing from the spirit of my invention.

Having thus described my invention, what I claim as new is—

1. In a refining-engine, in combination with a plug having a series of annular projections, or rings, thereon, a series of blades arranged around the plug in groups, certain of said rings being grooved to receive one blade of each group, while the blade adjacent thereto is provided with recesses to span said rings.

2. In a refining-engine, in combination with a plug having a series of annular projections, or rings, thereon, a series of blades arranged around the plug in groups, said rings being provided with grooves and said blades being provided with recesses, the arrangement being such that one of the blades in each group will span certain of said rings and seat in the recesses of others, while the adjacent blade will span the ring that is cut through, and seat in a groove of the ring that is spanned by, the other blade.

3. In a refining-engine, in combination with a plug having a series of annular projections, or rings, thereon, a series of blades arranged around the plug in groups, certain of said rings being grooved to receive one blade of each group, while the blade adjacent thereto is provided with recesses to span said rings, and filling-strips separating the blades of each group and provided with recesses for spanning all of said rings.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SOLOMON R. WAGG.

Witnesses:
GEO. H. PEERENBOOM,
JOHN H. L. NEELER.