July 29, 1952 R. L. DRAPER 2,604,824

JORDAN ENGINE CONSTRUCTION

Filed May 5, 1947

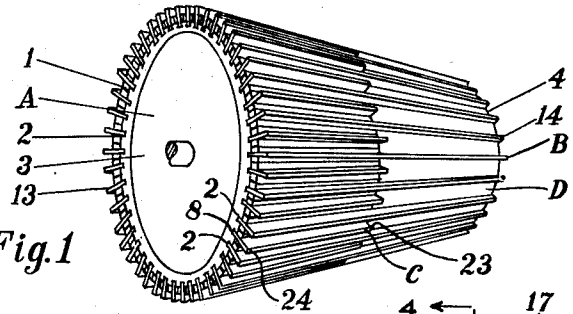


Fig. 1

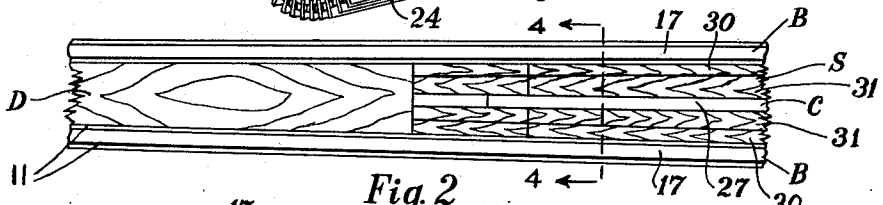


Fig. 2

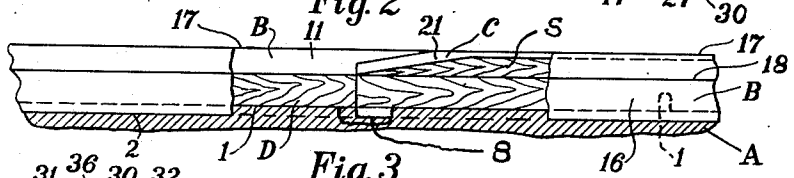


Fig. 3

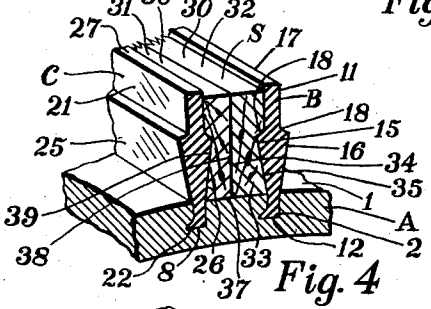


Fig. 4

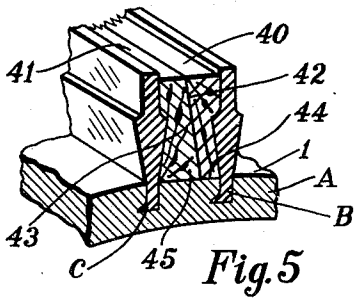


Fig. 5

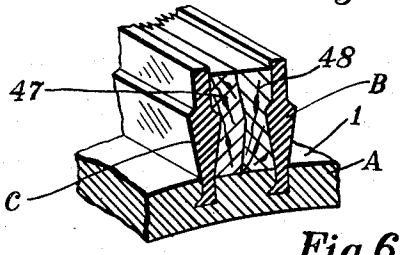


Fig. 6

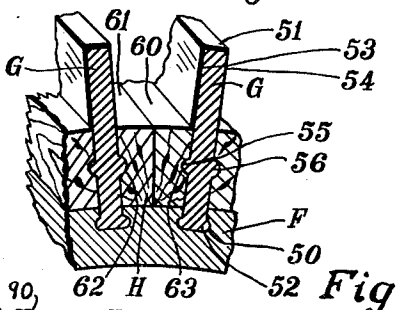


Fig. 7

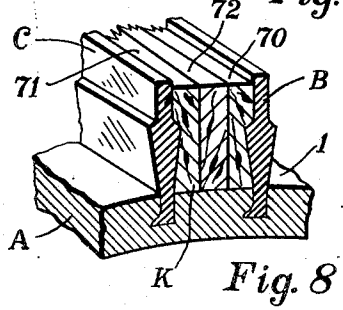


Fig. 8

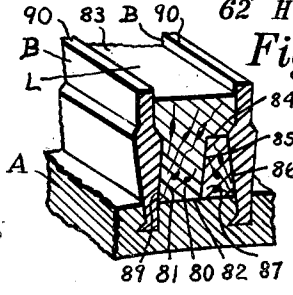


Fig. 9

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Patented July 29, 1952 2,604,824

UNITED STATES PATENT OFFICE

2,604,824

JORDAN ENGINE CONSTRUCTION

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Application May 5, 1947, Serial No. 746,077

4 Claims. (Cl. 92—27)

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This invention relates to the construction of the frusto-conical plugs of Jordan engines such as are used for refining paper stock.

In these engines there is a frusto-conical shell from the inside of which knives project inwardly and inside this shell revolves a plug from the outer curved surface of which project bars which cooperate with the knives in the treating of the stock.

As such bars on the outside of a plug revolve at a high rate of speed, they must be anchored in some way to the plug such as by having slots of more or less dovetailed or angular shape into which the inner edges of the bars fit, whereby the bars are locked in position as they must have been positioned by being pushed or driven in from the ends as shown in patent to Bolton, No. 1,829,630 of October 27, 1931, on which this invention is an improvement, or the bars may be held in place in the usual manner in which the plug is made up of annular bands under which hooks on the bars extend.

In any case, the space between adjoining bars is wholly or partially filled by separating members generally known in the trade as woods which are of wedge shape longitudinally but which diverge laterally. As a result of this divergence the centrifugal force tends to throw them out and it has been found highly desirable, if not necessary, to lock them in place in some way.

When and if applicant's separating members become worn, the wedge-shaped members can be driven out from the small end, whereupon his non-wedge-shaped members can quickly be taken out, while the metal bars stay right in position so that replacements can readily be made.

In the Bolton patent above indicated, the bars are fastened or anchored to the outside of the plug and in one form the sides diverge while the sides or side faces of the separators converge laterally, whereby, as the bars are held in place at their inside edges as by being driven into the slots from the large end, and the separators are also driven in from the large end each between adjoining bars, the whole assembly is locked in place.

In other forms of this construction there may be a longitudinal rib on one or both sides of each bar and a corresponding groove on one or both sides of the separating member which is of wedge shape longitudinally but whose side faces may diverge laterally, the locking effect being the same when the separator is driven in from the large end.

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This invention is a multiple part separator made of two or more pieces, one of which is placed in position by putting it radially in between adjoining bars. This member need not be of wedge shape longitudinally but another member is provided which is of wedge shape longitudinally and this when driven in position, locks the multiple part separator in place.

I may use three or more pieces to make each separator, some with parallel or substantially parallel sides lengthwise, which can be put in position first and another or others which can be driven into position from the large end or even from the small end.

Some plugs are made with long bars all of which extend from the large to the small end and in such case my multiple part separators can extend the full length of the bars but, as most plugs are made with shorter bars alternating with the full length bars, I find it convenient to use one set of separators which I will call the small end separators which extend from the small end to the ends of the short bars and other sets of separators which extend only the length of the short bars and are positioned between them and the adjoining bars. These I will call the large end separators.

The first set of small end separators extending from the small end to the short bars can each be made in one piece and can be driven in after the long bars are in position but before the short bars are in place, or these separators can be made in two or more parts which can conveniently be put in position before the short bars are in place although they can be so made that after both the long and short bars are in place, one part of these small end separators can be pushed from the outside radially inward into position and the other part, which would be of wedge shape, can then be driven in by suitable means in a general axial direction until the parts of such small end separator are firmly anchored in position between the long bars.

As shown, the small end separators are of a less height than those between the short bars at the large end.

In the drawings, Fig. 1 is an isometric view of a plug embodying my invention.

Fig. 2 is a plan view of two long bars and a short bar with separators made according to my invention.

Fig. 3 is a side view in section of the bars and separators shown in Fig. 2, with portions cut away to show the construction.

Fig. 4 is a sectional isometric view of a long and short bar with one form of my new separators.

Fig. 5 is a view similar to Fig. 4 of a modification.

Fig. 6 is a view similar to Fig. 4 of another modification.

Fig. 7 is a view similar to Fig. 4 of my new separator as used with a modified form of bar.

Fig. 8 is a view similar to Fig. 4 of still another modification in which the separator is made of three sections.

Fig. 9 is a view similar to but reduced in size from Fig. 4 of another modification, of a two part separator.

In the drawings A represents a plug body having a curved surface 1 in which are dovetail shaped slots 2 for seating the long bars B and 8 for the short bars C. 3 is the large end and 4 is the small end of the plug A.

Each long bar B at the top or outside 11 has parallel sides and at its inside or bottom edge 12 is of dovetail shape as shown, and is seated in a slot 2. Sides 15 and 16, as shown, diverge and then come together to form shoulders 18, 18 at the working or cutting outside 11 which terminates at the top or cutting face 17.

13 represents the end of a bar B at the large end and 14 represents the end of a bar B at the small end.

The short bars C have a top or outside part 21 and an inside or bottom edge 22, diverging sides 25 and 26, and a cutting face 27. 23 represents the small end and 24 the large end. The bottom edges 22 of bars C, as shown, enter the short dove-tailed slots 8 which are spaced between the long bar slots 2, these slots and the short bars C being spaced between the long slots and the long bars B.

As shown in Figs. 1 to 6 the separating members at the small end are indicated by D and as shown, are of one piece while those at the large end which are positioned between the short bars C and the long bars B are made of multiple parts and as an assembly are indicated by S.

As shown in Fig. 4, each of these separators S is made of two parts namely 30 and 31. These are shown as extending from the curved surface 1 of the plug up to near the tops of the bars. The top, bottom and side faces of the member 30, all run in lines which are parallel, whereby the top face 32 and bottom 33 are parallel and inside face 34 is at right angles thereto while all parts of the face 35 which come in contact with a bar conform to the side face of that bar and lie in similar parallel lines. For convenience, I will call these parts the straight shaped parts.

It will be noted that the bottom face 33 of this part must be narrow enough to go between the shoulders 18, 18 of the adjoining bars so that this part can be pushed or placed in position between adjacent bars from the outside radially inward.

The other member 31 has a top face 36 and a bottom face 37 which are parallel and an inside face 38 which corresponds with and fits adjoining face 34 and an outside face 39 which fits the adjoining side face of a bar. The difference between the parts 30 and 31 is that the part 31, as shown, is of wedge shape longitudinally and after the part 30 is put in position, the wedge shaped part 31 must be driven in between part 30 and the adjacent bar so that when once in position, it locks the parallel part 30 as well as itself firmly in place. I will call parts similar to 31, the wedge shaped parts.

In Fig. 5 is shown a two part separator wherein the straight shaped part 40 has faces which lie in parallel lines in a manner similar to the part 30 while the wedge shaped part 41 is of wedge shape longitudinally, the difference being that the adjoining faces 42 of 40 and 43 of 41 lie in the same plane but that plane slopes from left to right inward so that the inside face 44 of 40 is, as shown, much narrower than the inside face 45 of 41.

In Fig. 6 is shown another construction in which the straight shaped part 47 is parallel and the wedge shaped part 48 is tapered, but the adjoining faces are angular as shown instead of each being in a single flat plane.

In Fig. 7 is shown a two part separator H made up of straight shaped part 60 and wedge shaped part 61. In this case the bars G are shown with parallel sides but having at the bottom or inside 52 a bead which fits a suitable slot such as 50 in the body F and a top 51, sides 53 and 54, lengthwise of each of which are suitable ribs 55 and 56.

In this case, the two part separating members indicated by H are made up of one straight shaped member 60 with faces which run in parallel lines and another wedge shaped member 61 which is tapered in a manner similar to those hereinbefore described, the difference being that each part has a groove such as 62 or 63 which engages a rib such as 55 or 56 whereby when the part 60 is placed in position and the part 61 is driven into place, the ribs entering the grooves hold the whole assembly in place.

In Fig. 8, I show a plug body A and bars B and C such as those shown in Figs. 1 to 6, but the separating member indicated by K is made up of two straight shaped parts namely 70 and 71 whose faces lie in parallel lines and wedge shaped part 72 which is tapered longitudinally. In this case, the parts 70 and 71 are first put in position and then the wedge shaped part 72 is driven into place.

In Fig. 9, I show a plug body A and long bars B, B, such as shown in Figs. 1 to 6, with a separating member L made up of the part 80, of which part of one face 81 fits a diverging face 89 of one bar B and with a bottom face 82 narrow enough to go in between the shoulders of bars B, B. The top face 83 of member L extends the full distance between the top parts 90, 90 of bars B, B, and has a recess 84 and a face 85 which is so made that when it is associated with a face 86 of the other bar B, the wedge shaped part 87 can be driven in as shown between the faces 85 and 86, resting on top of face 82 of the plug thereby locking the part 80 in place as well as wedge part 87 and thus the whole multiple part separating member L.

By laterally is meant sidewise or transversely.

I claim:

1. For use with a Jordan engine plug having a frustro-conical body; a multiple part separating member of keystone shape laterally and of wedge shape longitudinally one part having its side faces lying in substantially parallel planes and another part with side faces which converge from the large towards the small end of the multiple part separating member, both converging side faces extending in straight unbroken longitudinal lines.

2. For use with a Jordan engine plug having a frustro-conical body; a multiple part separating member of keystone shape laterally and of wedge

shape longitudinally at least one part having its side faces lying in substantially parallel lines and at least one other part with side faces which converge from the large towards the small end of the multiple part separating member, both converging side faces extending in straight unbroken longitudinal lines.

3. For use with a Jordan engine plug having a frustro-conical body; a multiple part wooden separating member of wedge shape longitudinally at least one part having its side faces lying in substantially parallel lines and at least one other part with side faces which converge from the large towards the small end of the multiple part separating member, both converging side faces extending in straight unbroken longitudinal lines.

4. The combination with a Jordan engine plug having a frustro-conical metal body; of two adjoining metal bars each attached at its bottom edge to the said plug body so that it stands alone, each of said bars having sides which face each other extending in unbroken longitudinal lines which faces converge longitudinally, each of said sides having a longitudinal projection which extends towards the other bar each such projection being parallel with the top and bottom of its bar the entire length thereof; and a wooden separating member, the bottom of one

part being of such width as to allow it to be pushed radially between the bars inside such projections with its side faces extending in parallel lines, one side engaging an adjoining face of a bar and the other face engaging the side face of the other part and the other part being of wedge shape longitudinally with one side which engages the adjoining side of the first part and the other side engaging an adjoining face of the other bar, the sides of the faces of such second part converging from the large end toward the small end of the plug, said part being driven in from the large end between the side face of the first part and the side face of a bar so as to fill the longitudinally converging space between such bars and to lock the two part wooden separator in place against radial displacement.

RALPH L. DRAPER.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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2,306,672	Tucker	Dec. 29, 1942