

L099,758

PATENT SPECIFICATION

DRAWINGS ATTACHED

L099,758



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COMPLETE SPECIFICATION

Improvements in or relating to Machines for Processing Tea Leaf

I, PETER JOHN PARR, of Post Box 2261, Royal Exchange, 6, Netaji Subhas Road, Calcutta, West Bengal, India, a British subject, do hereby declare the invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to improvements in machines for processing tea leaf after withering and before drying and to attachments therefor.

It has for its object to provide a new attachment for the rotor of such machines, an improved rotor, and an improved machine incorporating such improved rotor.

The machine of the type to which this invention relates is described in United Kingdom Patent No. 856568. It comprises a cylindrical stator having a plurality of sets of pins or the like projecting from a substantial portion of its inner wall starting from the discharge end thereof, an opening near the other end thereof to feed tea leaf to be processed and a rotor adapted to advance tea leaf from the feed end to the discharge end of the stator by axial rotation therein and simultaneously processing it during such advance. The rotor therein comprises a helical feed worm on a rotor shaft for a part of its length near the feed end and a plurality of sets of vanes or the like projecting from along the remaining length of said shaft. Said vanes or the like are staggered relative to said sets of pins or the like in the stator wall.

The attachment of this invention is adapted to either replace a part of the length (from the discharge end) of the rotor shaft (or what is also known as screw conveyor) bearing vanes and the like or to be axially mounted at the discharge end of the rotor with an extension shaft.

Thus the present invention includes the new attachment as well as a rotor incorporating

such attachment, either as an integral part or when fitted thereto.

The invention further includes a machine of the type described in which rotor is of the improved type as referred to above, i.e. includes the attachment.

The proposed attachment is a conical or frusto conical body with flutes on its curved surface, said flutes being helically disposed.

According to this invention, therefore, there is provided in and for a rotor for tea processing machine of the type described, an attachment comprising a conical or frusto conical member having its curved surface fluted with the flutes helically disposed, the conical or frusto-conical end thereof being adapted to be mounted at the end of the rotor shaft at the discharge end of the stationary cylinder, for axial drive, said attachment being adapted to be enclosed by the end portion of, or by an extension of, the stationary cylinder, i.e. stator, of said machine, leaving a clearance for processed tea to discharge from around the base of the attachment.

The curved surface of the attachment may be fluted by fixing battens to the said surface or flutes may be integrally formed thereon.

If an axial shaft is provided for the attachment it may be arranged to be screwed onto or otherwise coupled to the rotor shaft end of the rotor (or screw conveyor) of an existing machine.

Again, the attachment may have an axial bore and a shaft, with an internally threaded bore, mounted on the base of the attachment so that the rotor shaft end may be inserted into said axial bore and coupled to the attachment by screwing onto the threaded internal bore on the shaft of the attachment, which now acts as an extension of the rotor shaft.

The invention further provides in and for a tea processing machine of the type described wherein sets of pins or the like project from substantially central portion of the inner wall

of the stator, a rotor adapted to advance tea leaf from the feed and to the discharge end of the stator by axial rotation therein and simultaneously processing it during such advance, said rotor comprising a helical feed worm along a part of the rotor shaft length, near the feed end, a plurality of sets of vanes or the like projecting from substantially the central portion along the length of said shaft, said vanes or the like being staggered relative to said sets of pins or the like in the stator wall and an attachment as described above comprising the other end of the said rotor, said attachment being axially mounted or formed around the remaining length of the rotor shaft.

This invention also includes the tea processing machine comprising a cylindrical stator having a plurality of sets of pins or like projecting from substantially central portion of its inner walls, a rotor axially rotatable within said stator, said rotor comprising a helical feed worm along a part of the rotor shaft length at one end, a plurality of sets of vanes or the like projecting from substantially the central portion of the length of the said shaft and being staggered relative to said sets of pins or like in the stator wall, and an attachment as described above comprising the other end of the said rotor, said attachment being axially mounted or formed around the remaining length of the rotor shaft, said stator having an opening above the feed worm to feed tea leaf to be processed, the edge of the base of the attachment clearing the stator walls for processed tea leaf to be discharged from around such edge.

The invention is described further with reference to the drawings accompanying the specification.

In the drawings:

Fig. 1 shows the attachment according to a preferred embodiment of the invention.

Fig. 2 shows the same in part section with a rotor shaft fitted thereto.

Fig. 3 shows the improved rotor within a stator of a tea processing machine.

Figs. 4 and 5 show the improved tea processing machine in two views.

Referring to the drawings, 1 is the frusto-conical member comprising the attachment. Its curved surface 2 is fluted by disposing helical battens 3 on such surface. The base of the conical member 1 is provided with a shaft 8 and has an internally threaded portion 15. A coaxial opening 16 runs across the height of said member 1. A rotor shaft 7 can be screwed into the threaded portion 15 by passing the attachment over the rotor shaft 7 through said opening 16. So mounted, the shaft 8 may be regarded as an extension of the rotor shaft 7 of the rotor 4.

Referring to figs. 3, 4 and 5 the rotor of the tea processing machine 11 comprises a conveyor worm 12 on the shaft 7 within stator

cylinder 4 and below the position of feed hopper 17, the attachment 1 mounted at the other end of the shaft 7 (within the cylinder 4), and a plurality of sets of vanes 5 projecting from the intermediate portion of the said shaft 7 between member 1 and the conveyor worm 12. The extension piece 8, on the member 1, is externally supported by a bearing 18 on a yoke 13. The yoke 13 is in turn mounted on two retractable side bars 14. The side bars 14, when withdrawn, serve to the purpose of supporting the stator cylinder 4.

The stator cylinder, described below, comprises one part of the tea processing machine, and the rotor described above comprises the other part of the tea processing machine.

The stator cylinder 4 has a plurality of sets of pins or the like 6 projecting from substantially the central portion thereof. The sets of pins or the like 6 are staggered relative to the said sets of vanes or the like 5 on the shaft 7 when the rotor is disposed within the stator. At one end of cylinder 4 is disposed a feed hopper 17.

When the machine is worked and the tea fed from the hopper 17 it is conveyed by worm 12 to between the sets of vanes 5 and of teeth 6 where processing commences and from there, i.e. the end of the teeth 6, the tea leaf travels along a diverging path 10 between the internal wall of the stator 4 and the curved surface 2 of the attachment 1 bearing the helical battens 3, to be discharged from the opening 19 around the base of the attachment 1.

In passing through the shaded diverging path 10 the tea leaf is subjected to increasing rolling pressure before being finally discharged.

WHAT I CLAIM IS:—

1. In and for a rotor for tea processing machine of the type described an attachment comprising a conical or frusto-conical member having its curved surface fluted with the flutes helically disposed, the conical or frusto-conical end thereof being adapted to be mounted at the end of the rotor shaft at the discharge end of the stationary cylinder, for axial drive, said attachment being adapted to be enclosed by the end portion of, or by an extension of, the stationary cylinder i.e. stator, of said machine, leaving a clearance for processed tea to discharge from around the base of the attachment.

2. An attachment as claimed in claim 1 characterised in that the said curved surface is fluted by fixing battens to the surface.

3. An attachment as claimed in claim 1 characterised in that the flutes are integrally formed.

4. An attachment as claimed in any of the claims 1 to 3 characterised by the inclusion of an axial shaft.

5. An attachment as claimed in any of the claims 1 to 3 characterised by a bore extending





of the stator, a rotor adapted to advance tea leaf from the feed and to the discharge end of the stator by axial rotation therein and simultaneously processing it during such advance, said rotor comprising a helical feed worm along a part of the rotor shaft length, near the feed end, a plurality of sets of vanes or the like projecting from substantially the central portion along the length of said shaft, said vanes or the like being staggered relative to said sets of pins or the like in the stator wall and an attachment as described above comprising the other end of the said rotor, said attachment being axially mounted or formed around the remaining length of the rotor shaft.

This invention also includes the tea processing machine comprising a cylindrical stator having a plurality of sets of pins or like projecting from substantially central portion of its inner walls, a rotor axially rotatable within said stator, said rotor comprising a helical feed worm along a part of the rotor shaft length at one end, a plurality of sets of vanes or the like projecting from substantially the central portion of the length of the said shaft and being staggered relative to said sets of pins or like in the stator wall, and an attachment as described above comprising the other end of the said rotor, said attachment being axially mounted or formed around the remaining length of the rotor shaft, said stator having an opening above the feed worm to feed tea leaf to be processed, the edge of the base of the attachment clearing the stator walls for processed tea leaf to be discharged from around such edge.

The invention is described further with reference to the drawings accompanying the specification.

In the drawings:

Fig. 1 shows the attachment according to a preferred embodiment of the invention.

Fig. 2 shows the same in part section with a rotor shaft fitted thereto.

Fig. 3 shows the improved rotor within a stator of a tea processing machine.

Figs. 4 and 5 show the improved tea processing machine in two views.

Referring to the drawings, 1 is the frusto-conical member comprising the attachment. Its curved surface 2 is fluted by disposing helical battens 3 on such surface. The base of the conical member 1 is provided with a shaft 8 and has an internally threaded portion 15. A coaxial opening 16 runs across the height of said member 1. A rotor shaft 7 can be screwed into the threaded portion 15 by passing the attachment over the rotor shaft 7 through said opening 16. So mounted, the shaft 8 may be regarded as an extension of the rotor shaft 7 of the rotor 4.

Referring to figs. 3, 4 and 5 the rotor of the tea processing machine 11 comprises a conveyor worm 12 on the shaft 7 within stator

cylinder 4 and below the position of feed hopper 17, the attachment 1 mounted at the other end of the shaft 7 (within the cylinder 4), and a plurality of sets of vanes 5 projecting from the intermediate portion of the said shaft 7 between member 1 and the conveyor worm 12. The extension piece 8, on the member 1, is externally supported by a bearing 18 on a yoke 13. The yoke 13 is in turn mounted on two retractable side bars 14. The side bars 14, when withdrawn, serve to the purpose of supporting the stator cylinder 4.

The stator cylinder, described below, comprises one part of the tea processing machine, and the rotor described above comprises the other part of the tea processing machine.

The stator cylinder 4 has a plurality of sets of pins or the like 6 projecting from substantially the central portion thereof. The sets of pins or the like 6 are staggered relative to the said sets of vanes or the like 5 on the shaft 7 when the rotor is disposed within the stator. At one end of cylinder 4 is disposed a feed hopper 17.

When the machine is worked and the tea fed from the hopper 17 it is conveyed by worm 12 to between the sets of vanes 5 and of teeth 6 where processing commences and from there, i.e. the end of the teeth 6, the tea leaf travels along a diverging path 10 between the internal wall of the stator 4 and the curved surface 2 of the attachment 1 bearing the helical battens 3, to be discharged from the opening 19 around the base of the attachment 1.

In passing through the shaded diverging path 10 the tea leaf is subjected to increasing rolling pressure before being finally discharged.

WHAT I CLAIM IS:—

1. In and for a rotor for tea processing machine of the type described an attachment comprising a conical or frusto-conical member having its curved surface fluted with the flutes helically disposed, the conical or frusto-conical end thereof being adapted to be mounted at the end of the rotor shaft at the discharge end of the stationary cylinder, for axial drive, said attachment being adapted to be enclosed by the end portion of, or by an extension of, the stationary cylinder i.e. stator, of said machine, leaving a clearance for processed tea to discharge from around the base of the attachment.

2. An attachment as claimed in claim 1 characterised in that the said curved surface is fluted by fixing battens to the surface.

3. An attachment as claimed in claim 1 characterised in that the flutes are integrally formed.

4. An attachment as claimed in any of the claims 1 to 3 characterised by the inclusion of an axial shaft.

5. An attachment as claimed in any of the claims 1 to 3 characterised by a bore extending



axially through the member and an extension shaft at the base of the member adapted to be coupled to the rotor shaft when the latter is passed through said bore.

5 6. An attachment as claimed in claim 5 characterised in that the extension shaft is internally threaded for being screwed on to the rotor shaft for coupling together.

10 7. In and for a tea processing machine of the type described wherein sets of pins or like project from substantially central portion of the inner wall of the stator, a rotor adapted to advance tea leaf from the feed end to the discharge end of the stator by axial rotation therein and simultaneously processing it during
15 such advance, said rotor comprising a helical feed worm along a part of rotor shaft length near the feed end, a plurality of sets of vanes or the like projecting from substantially the
20 central portion along the length of said shaft, said vanes or the like being staggered relative to said sets of pins or the like in the stator wall, and an attachment as claimed in any of the claims 1 to 6 comprising the other
25 end of the said rotor said attachment being axially mounted or formed around the remaining length of the rotor shaft.

30 8. A tea processing machine comprising a cylindrical stator having a plurality of sets of pins or the like projecting from substantially central portion of its inner walls, a rotor axially rotatable within said stator, said rotor com-

prising a helical feed worm along a part of the rotor shaft length at one end, a plurality of sets of vanes or the like projecting from substantially the central portion of the length
35 of the said shaft and being staggered relative to said sets of pins or the like in the stator wall, and an attachment as claimed in any of the claims 1 to 6 comprising the other
40 end of the said rotor, said attachment being axially mounted or formed around the remaining length of the rotor shaft, said stator having an opening above the feed worm to feed tea leaf to be processed, edge of the base of the
45 attachment clearing the stator walls for processed tea leaf to be discharged from around such edge.

9. In and for a rotor for a tea processing machine of the type described an attachment substantially as herein described with reference to the accompanying drawings.

10. In and for a tea processing machine of the type described, a rotor as claimed in claim 7 substantially as herein described with reference to the accompanying drawings.

11. A tea processing machine as claimed in claim 8 substantially as herein described with reference to the accompanying drawings.

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