

Aug. 31, 1937.

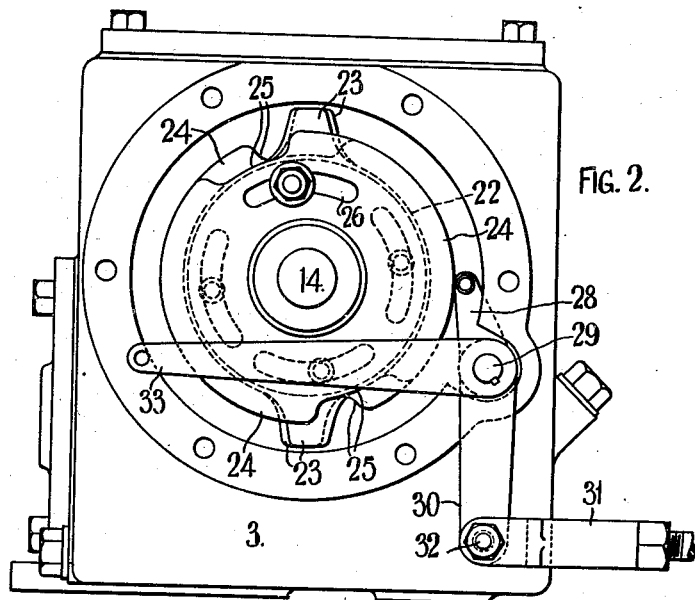
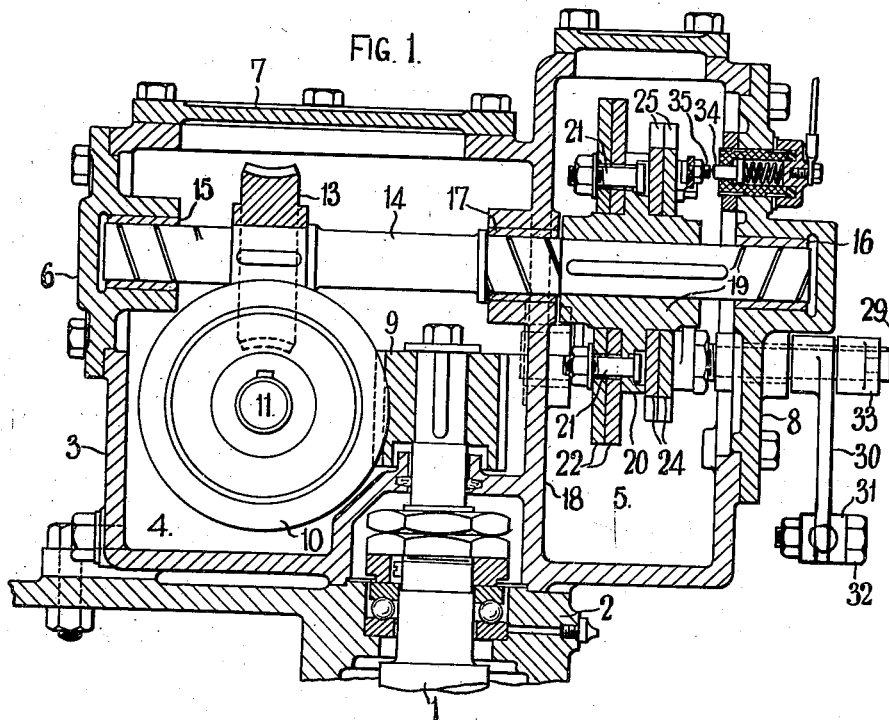
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2,091,582

TEA ROLLING MACHINERY

Filed Aug. 22, 1935

2 Sheets-Sheet 1



Inventor,
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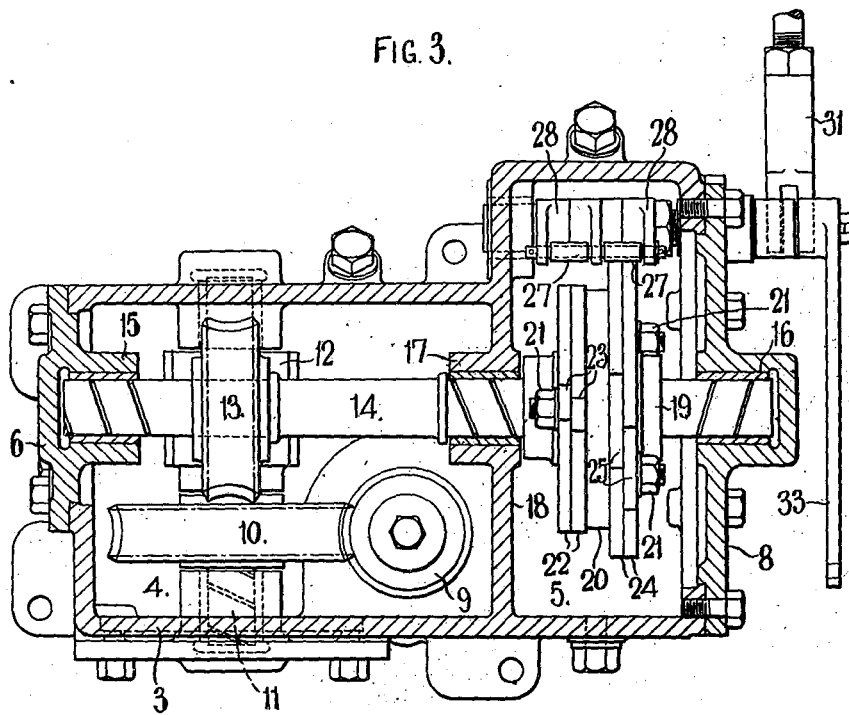
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2 Sheets-Sheet 2

FIG. 3.



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UNITED STATES PATENT OFFICE

2,091,582

TEA-ROLLING MACHINERY

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Application August 22, 1935, Serial No. 37,410
In Great Britain September 6, 1934

2 Claims. (Cl. 74—53)

This invention relates to tea-rolling machines and, in the usual form of construction, such machines are provided with a horizontal table above which is supported a box or container for the tea-
5 leaf to be rolled, this box being open at the top and the bottom and provided with a top plate or cap so that the tea-leaf is contained between the table and the top plate or cap. The table and the box are generally given a rotary motion by
10 means of three cranks and pressure is applied to the top plate or cap by means of a screw gear which may be actuated either by hand or by mechanical means.

In rolling the leaf during the process of manufacture, it is advantageous during one period of the rolling process to roll the leaf under pressure during which time the leaf tends to heat, then to relieve the pressure and allow the leaf to expand and cool and become aerated, the leaf being then
20 rolled for a period without pressure. The pressure is thus applied and relieved intermittently.

The object of the present invention is to provide means for automatically applying and relieving the required pressure, or for automatically
25 and correctly controlling the pressure applied at definite periods during the rolling process, the duration of the periods and the intervals between the commencement of the periods being determined by the characteristics of the leaf under
30 treatment.

According to this invention the pressure mechanically applied to the top plate of the box containing the leaf is controlled or applied by mechanism operated by the machine itself during
35 the rolling operation.

The mechanism for controlling or applying the pressure on the top plate or cap on the box containing the leaf to be rolled may be of any convenient form, but preferably comprises a cam or
40 cams formed so that one part of the cam surface increases or controls the increase of the pressure, another part of the cam reduces or controls the reduction of the pressure, whilst a third part of the cam surface holds the pressure unaltered.

Each part of the cam arrangement is adjustable so that the length of each period of application or relief of pressure may be adjusted as required to suit the characteristics of the leaf being rolled.

In one preferred construction of cam arrangement there are two cams for controlling the mechanical application of the pressure or relief from pressure, and each cam is formed by a pair of cam plates which are bolted together to a cam carrier. Each cam plate of a pair is provided with the
55 necessary projecting portions or cut away portions

which together form the projections or recesses on the face of a complete cam and the bolts by which the cam plates are attached to the carrier or holder pass through arcuate slots so that the positions of the pair of cam plates forming each
5 cam may be adjusted relatively to one another to adjust the length of a projection or depression on the cam surface, and so that the two complete cams may be adjusted relatively to one another. The cams are driven directly from the crank
10 which moves the table or box for rolling the tea leaf, through a reduction gearing such as two sets of worm and worm wheels. The cams act on rollers which are carried on levers secured to a
15 single shaft which carries an operating lever connected by a connecting rod with the gear box through which is driven the screw or other means for applying pressure to the top plate or cap of the rolling table.

One arrangement according to the invention is illustrated in the accompanying drawings in which:—

Fig. 1 is a sectional elevation of the cam arrangement and the drive therefor;

Fig. 2 is an end view, with the end cover removed, of the casing containing the cams; while
25 Fig. 3 is a sectional plan view of Fig. 1.

In the drawings, reference numeral 1 indicates the top end of one of the cranks by which the table is driven, and this crank 1 rotates in a bearing
30 2 to the top of which is attached a casing 3 divided into two compartments 4 and 5, one of which, 4, contains the reduction gearing by which the cams are driven from the crank 1, while the other compartment 5 contains the
35 levers on which they act. These two compartments 4 and 5 are closed by cover plates such as 6, 7 and 8 respectively, for permitting access to the mechanism and for adjusting the cams.

The reduction gearing for driving the cams
40 from the crank 1 consists of a worm 9, keyed to the top of the crank 1, which meshes with a worm wheel 10 carried on a transverse shaft 11 which also has keyed to it a second worm 12 which meshes with worm wheel 13. This worm wheel
45 13 is keyed to a cam shaft 14 which runs in bearings 15 and 16 in the end plates 6 and 8 respectively and in an intermediate bearing 17 formed in the dividing wall 18 which separates the two compartments 4 and 5. By means of this double
50 worm and worm wheel reduction gearing it is possible to obtain a very slow speed for the cam shaft 14, and this is normally made one revolution for a complete cycle of the rolling operation.

On the cam shaft 14 is keyed a cam holder 55

or carrier 19 which consists of a boss provided with a projecting circular rib 20 to which the cams are bolted by bolts 21. One of the cams is formed by a pair of plates 22 which are similar in shape and consist of a circular portion which is provided at opposite points of its diameter with the projecting portions 23, which together form the cam projections as will be clear from Fig. 2. The other cam is formed by a pair of plates 24 which are circular but are provided at opposite points of their peripheries with cut-away portions 25 as will also be clear from Fig. 2. The bolts 21 by which the cam plates are secured to the cam holder 19 pass through arcuate slots 26 in the pairs of cam plates by which it is possible to adjust the position of the pairs of cam plates 22 and 24 relatively to one another in order to alter the positions of the projections 23 with respect to the depressions 25, and also by adjusting the cam plates 22 relatively to one another to alter the length of the complete cam projection formed by both projecting portions 23 and also by adjustment of the plates 24 relatively to one another to adjust the size of the depressed portion formed by the two cutaway portions 25 so that the contours of the cam surfaces may be altered. The two cams act on rollers 27 which are carried in levers 28 which are secured to a shaft 29 which is journaled in the end cover plate 8 and the dividing wall 18 of the casing, and, on its outer end which projects from the casing, the shaft 29 carries the lever 30 which fits between the forked end of rod 31 and is pivoted thereto by bolt 32. This rod 31 acts on a gear box through which is driven the pressure screw for raising or lowering the top plate or cap of the leaf rolling table.

In operation, as the crank 1 is rotated the cam shaft 14 is also rotated at a greatly reduced speed, and as the cam projections 23 and the depressions 25 bear on the rollers 27, the levers 30 and rod 31 are moved to alter the drive of the pressure screws in order to apply or relieve the pressure applied to the tea leaf during the rolling process. The shaft 29 also carries an arm 33 which has attached to its free end a weight or spring which acts to keep the rollers 27 in contact with the cam faces throughout the rotation of the cams, or this arm may be used for lifting the rollers off the cam when desired. Instead of this arm 33 other arrangements may be used for keeping the rollers in contact with the cam faces.

The end plate 8 also carries an electrical contact device 34 which is insulated from the plate 8 and is arranged so that an electrical circuit is completed, by means of a stud or other fitting 35 carried by the cam arrangement, each time a revolution of the cams is completed so as to give a signal by ringing a bell or by other suitable means to indicate that the cycle of operations is complete and that the machine requires attention.

Instead of the cams other equivalent mechanical means may be employed for automatically controlling the application of pressure or the relief of pressure during the operation of the machine.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a tea-rolling machine, a casing attached to the body of the machine and divided into two compartments by a partition wall, a shaft extending through both compartments and journaled in the partition wall and the ends of the casing, reduction gearing in one compartment for driving said shaft from the rolling machine itself, in the second compartment a carrier formed with a boss keyed on said shaft and an annular rib projecting from the boss, a pair of cam plates mounted on said boss on either side of its rib and rotatable on the boss, bolts passing through said rib and through arcuate slots in said plates to secure said plates in predetermined positions on said carrier, a spindle extending through the second compartment clear of said cam plates and journaled in the partition wall and the end wall of the casing and projecting from said casing, levers secured on said spindle within the second compartment, rollers on the free ends of said levers and bearing on the peripheries of the cam plates, and an operating lever secured to said spindle outside of the casing for controlling the mechanism for applying or relieving the pressure under which the tea leaves are rolled.

2. In a tea-rolling machine, an arrangement according to claim 1, with an electrical contact carried by, but insulated from, an end wall of the casing and projecting into the compartment containing the cams, and a second contact member secured to one of the cams and adapted to come into contact with the first mentioned contact as the cams complete a revolution.

AUGUSTUS BEVER.