Fig. 3.

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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-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 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 compacted, the leaf being then 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 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 treatment.

According to this invention the pressure mechanically applied to the top plate of the box containing the leaf is controlled or applied by the mechanism operated by the machine itself during 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 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 form the cam carrier. Each cam plate of a pair is provided with the 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 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 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 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

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 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 cams and the 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 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 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 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...
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 13 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

ig 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 journalled 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 con-
tact 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 cam 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 atten-
tion.

Instead of the cams other equivalent mechanici-
mal means may be employed for automatically
controlling the application of pressure or the re-
lief 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
compartment by a partition wall, a shaft ex-
tending through both compartments and jour-
nalled 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

n 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 journalled 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 mem-
er secured to one of the cams and adapted to
come into contact with the first mentioned con-
tact as the cams complete a revolution.

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