PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION

Improvements relating to Machinery for Rolling Rubber and similar Material

I, OSWALD ELSWORTH, of Tyneside Foundry & Engineering Company, Skinner Burn Road, Low Elswick, in the City and County of Newcastle-upon-Tyne, a British subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to machinery for rolling rubber and similar material, particularly for use on plantations.

Hitherto rubber or like rolling machinery has been arranged in groups or batteries comprising a number of machines disposed in alignment side by side, each machine comprising two or more rolls, said machines being driven by a common back shaft through independent clutches and reduction gears whereby each machine can be started and stopped without affecting the drive to the other machines of the battery.

The object of the present invention is to provide an improved construction wherein the independent clutches and reduction gears are dispensed with and the weight and cost of the battery correspondingly reduced.

According to my invention, I arrange in alignment end to end all the corresponding rolls of the machines forming the battery or group and couple them together to form a single shaft or rotary member, and for driving said shaft or member I provide suitable reduction gear at one end thereof, the other roll or rolls of each machine being driven through suitable gearing from said shaft or rotary member.

According to one example, each machine of the battery comprises a bed-plate supporting the necessary bearings for a pair of parallel rolls arranged one in front of and somewhat below the other, said rolls being coupled together by suitable gear wheels. The number of teeth in the gear wheels coupling the rolls of the several machines may be varied. The bed-plates of the machines are arranged side by side with interposed distance pieces so that the rear rolls of all the machines are in alignment end to end, and the spindles on which said rolls are mounted are suitably coupled together to form a single shaft. A suitable reduction gear is mounted on a bedplate at one end of the battery of machines and connected to the end of said shaft, said reduction gear being driven by a belt or otherwise conveniently.

If desired, each machine may be provided with two or more rolls suitably driven from the roll of the machine which forms a portion of the shaft driven by the reduction gear at the end of the battery of machines.

Dated this 18th day of November, 1933.

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COMPLETE SPECIFICATION

Improvements relating to Machinery for Rolling Rubber and similar Material

I, OSWALD ELSWORTH, of Tyneside Foundry & Engineering Company, Skinner Burn Road, Low Elswick, in the City and County of Newcastle-upon-Tyne, a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to machinery for rolling rubber and similar material, particularly for use on plantations.

Hitherto rubber or like rolling machinery has been arranged in groups or batteries comprising a number of machines disposed in alignment side by side, each machine comprising two or more rolls, said machines being driven by a common back shaft through independent clutches and reduction gears whereby each

machine can be started and stopped without affecting the drive to the other machines of the battery.

The object of the present invention is to provide an improved construction wherein the independent clutches and reduction gears are dispensed with and the weight and cost of the battery correspondingly reduced.

According to my invention, I arrange in axial alignment end to end one set of corresponding rolls of the individual machines forming the battery or group and couple them together to form a single shaft or rotary member, the other roll or rolls of each machine being driven through suitable gearing from said shaft or rotary member, and for driving said shaft or member I provide suitable reduction gear at one end or at any convenient point thereof.

In the accompanying drawings, which illustrate my invention,

Figure 1 is an elevation and Figure 2 a plan of a battery of rolling machines arranged in accordance therewith, the first and last machines only of the battery being shown, it being understood that any desired number of aligned similar machines may be interposed between the two machines illustrated;

Figure 3 is an end view of one of the machines; and

Figure 4 is a part sectional end view to a larger scale illustrating a detail.

Referring to the said drawings, in the example therein illustrated, each machine of the battery comprises a bed-plate *a* supporting the necessary bearings *b*, b^1 for a pair of parallel rolls *c*, *d* arranged one in front of the other. The rolls are coupled together by suitable gear wheels *e*, *f* keyed to their spindles *g*, *h*. The number of teeth in the gear wheels coupling the rolls of the several machines may be varied; for example, those of the first set of rolls may have an equal number of teeth and those of the remaining rolls may have say 16 and 24 teeth respectively to exert a rubbing effect on the rubber in addition to pressure. The bedplates *a* of the machines are arranged side by side in alignment with (if desired) interposed distance pieces so that the rear rolls *c* of all the machines are in axial alignment from end to end of the battery, and the spindles *g* on which said rolls are mounted are suitably coupled together by flexible or other couplings *p* to form a single shaft. A suitable reduction gear *j* is mounted on a bedplate *k* at one end of the battery of machines and connected by a coupling *m* to the end of said shaft, said reduction gear being driven in the example illustrated by an electric motor *n*, or it may be driven by a belt or otherwise conveniently from a suitable source of rotary power.

It will now be seen that, in my improved arrangement, the weight and cost of the battery and the power needed to drive it are materially reduced as only a single reduction gear *j* is provided for all the machines in the battery, and independent clutches are dispensed with. Stoppage of any one machine must obviously entail stoppage of all the machines in the battery, but, as the progress of the rubber sheets through the battery must necessarily be continuous, no additional delay is occasioned as compared with the hitherto customary battery wherein each machine is controlled by a separate clutch. In the case of a machine having to be dismantled for repairs, a length of shafting may be temporarily substituted for its roll *c* and gear wheel *e* to transmit the rotary drive and enable the other machines of the battery to be used.

The bearings *b*, b^1 for the spindles *g*, *h* of the rolls *c*, *d* of each machine are adjustable, as shown best in Fig. 4, to vary the gap between the rolls. The bearings *b* for the rear spindle *g* are fixed relatively to the bedplate of the machine, and the bearings b^1 for the front spindle *h* are each carried by parallel bolts *r* fitted with a bridge piece *s* provided with an adjusting screw *t* turned by a lever *u*. Between the bearings *b*, b^1 the bolts *r* are fitted with two-part adjustable sleeves *v*, *w*, the rear member *v* of each of which is externally threaded and is held from rotation by engaging a key *x* on the bolt, while the front member *w* is internally threaded and can be rotated to travel axially on said rear member to adjust the length of the sleeve. In use, the screw *t* is withdrawn, and the front members of the sleeves are revolved to provide the necessary gap between the rolls *c*, *d*. The screw *t* is then tightened up to move the front bearing b^1 on the bolts *r* until the sleeves *v*, *w* act as rigid distance pieces between it and the rear bearing *b* thus fixing the adjustment.

If desired, each machine may be provided with two or more rolls suitably driven from the spindle of the roll of the machine which forms a portion of the shaft driven by the reduction gear, and said reduction gear may be arranged at the end of the battery of machines or inserted at any convenient position in said battery, and it will be understood that, while the driven rolls are usually all arranged on one side of the driving shaft as illustrated, some of them may, if desired, be arranged on the other side thereof, without departing from the spirit of my invention. Further, while the in-

troduction of separate clutches for each machine can, by my invention, be dispensed with, a clutch may be incorporated in the drive to each machine, if desired.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. Machinery for rolling rubber and similar material wherein one set of corresponding rolls of the individual machines forming a battery or group are arranged in axial alignment end to end and are coupled together to form a single driving shaft or rotary member from which the other roll or rolls of each machine is or are driven.

2. A battery or group of rubber and similar rolling machines as claimed in claim 1 wherein the machines are arranged side by side with one roll of each machine in axial alignment with a roll of each of the other machines of the battery or group, the spindles of said aligned rolls being coupled together end to end to form a single shaft or rotary member, means being provided for driving said shaft or rotary member through reducing gear, and gearing being provided between said shaft or rotary member and each of the coacting rolls of the battery or group of machines whereby said coacting rolls are driven from said shaft or rotary member.

3. Rubber or similar rolling machines arranged as claimed in claim 1 or 2 wherein the bearings for the coacting rolls are relatively adjustable as herein described.

4. The improved battery of rubber or similar rolling machines arranged and operated substantially as herein described with reference to the accompanying drawings.

Dated this 16th day of October, 1934.

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Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. Machinery for rolling rubber and similar material wherein one set of corresponding rolls of the individual machines forming a battery or group are arranged in axial alignment end to end and are coupled together to form a single driving shaft or rotary member from which the other roll or rolls of each machine is or are driven.

2. A battery or group of rubber and similar rolling machines as claimed in claim 1 wherein the machines are arranged side by side with one roll of each machine in axial alignment with a roll of each of the other machines of the battery or group, the spindles of said aligned rolls being coupled together end to end to form a single shaft or rotary member, means being provided for driving said shaft or rotary member through reducing gear, and gearing being provided between said shaft or rotary member and each of the coacting rolls of the battery or group of machines whereby said coacting rolls are driven from said shaft or rotary member.

3. Rubber or similar rolling machines arranged as claimed in claim 1 or 2 wherein the bearings for the coacting rolls are relatively adjustable as herein described.

4. The improved battery of rubber or similar rolling machines arranged and operated substantially as herein described with reference to the accompanying drawings.

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