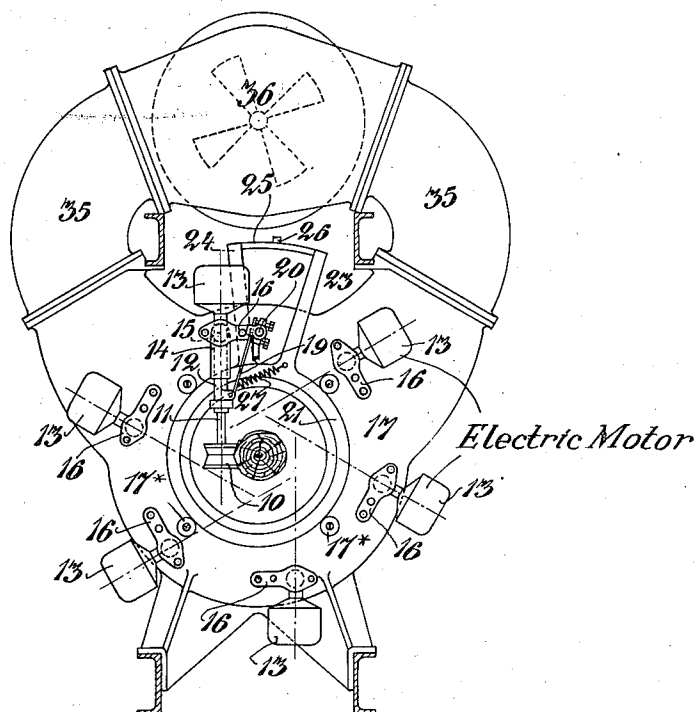


G. SPAAK.
WOOD BARKING APPARATUS.
APPLICATION FILED APR. 6, 1908.

944,290.

Patented Dec. 28, 1909.
4 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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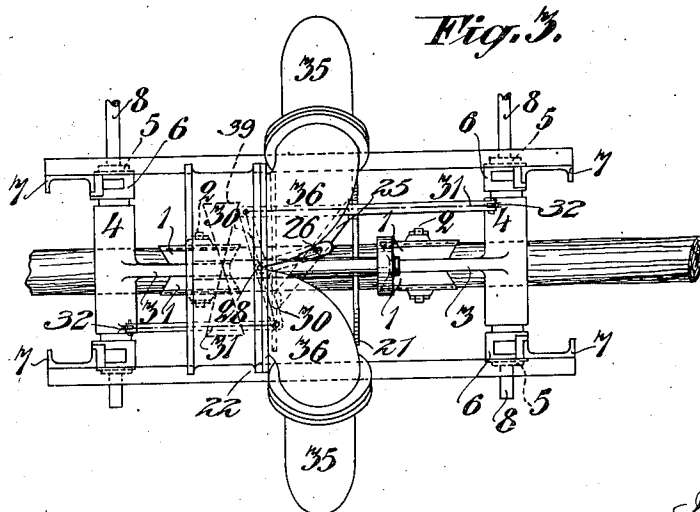
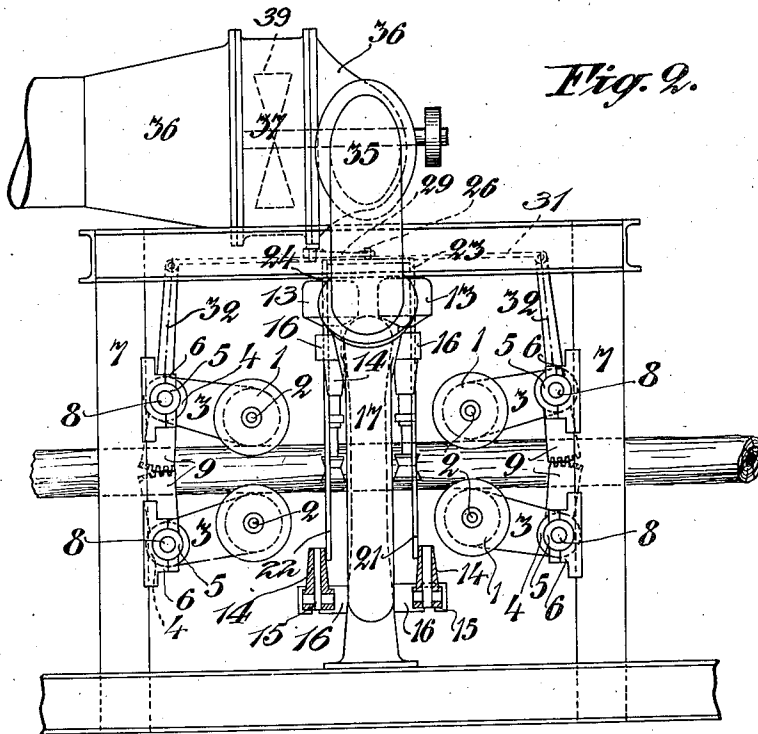
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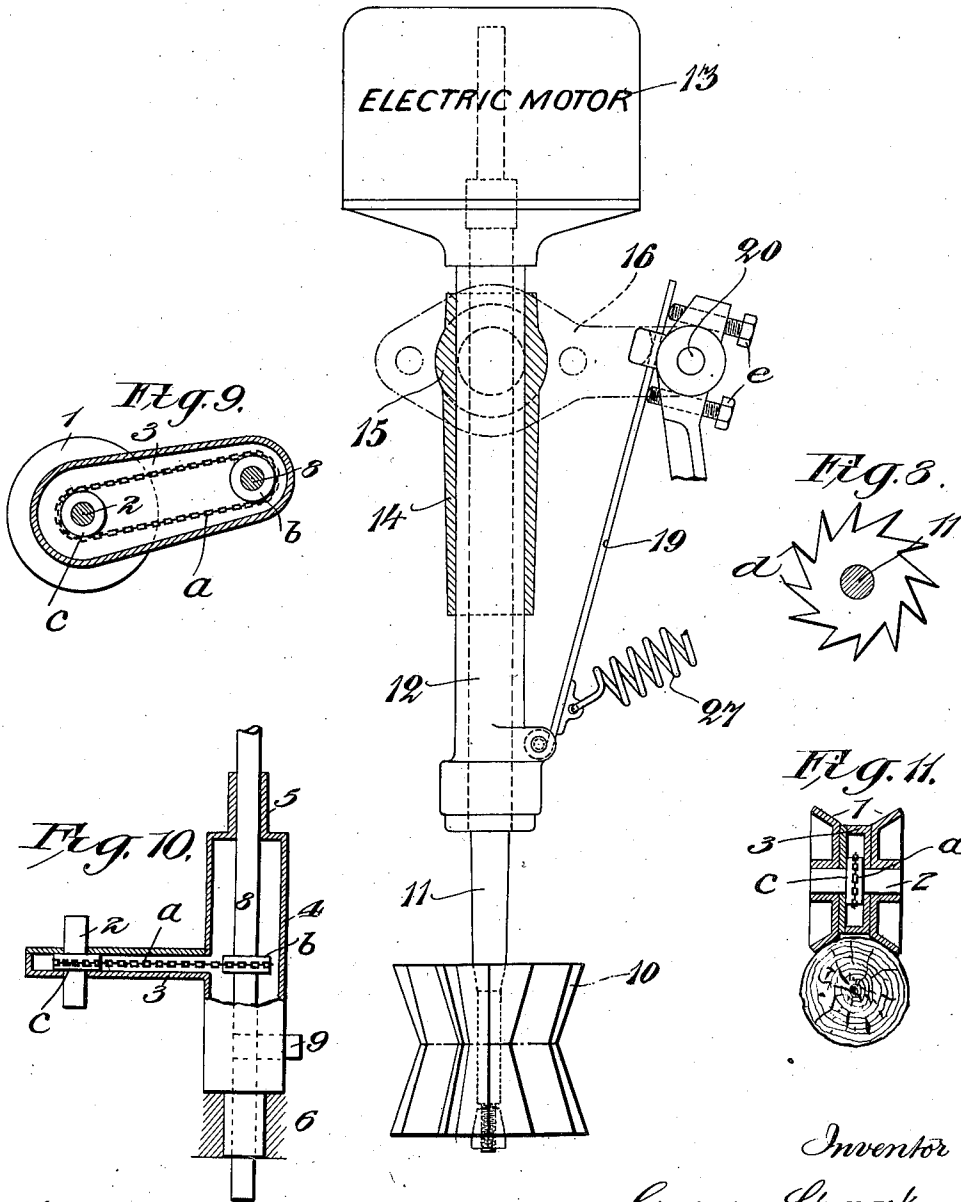
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4 SHEETS—SHEET 3.

Fig. 4.



Witness

Chas. H. Smith
A. C. Berrell

Inventor

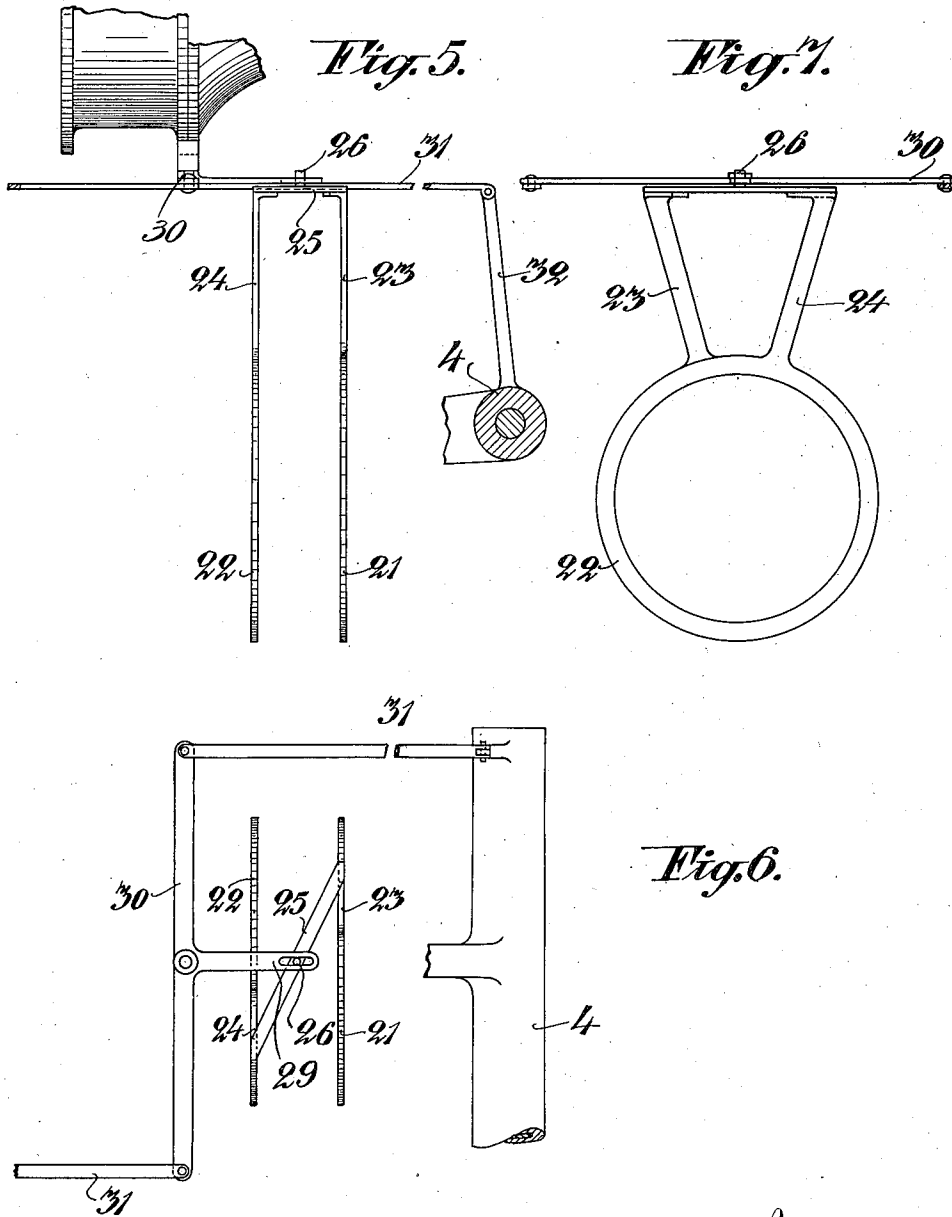
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

GEORGE SPAAK, OF BERGVIK, SWEDEN.

WOOD-BARKING APPARATUS.

944,290.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed April 6, 1908. Serial No. 425,515.

To all whom it may concern:

Be it known that I, GEORGE SPAAK, a subject of the King of Sweden, and resident of Bergvik, in the Kingdom of Sweden, have invented certain new and useful Improvements in Wood-Barking Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a machine for barking timber and more especially to the barking of timber employed in the manufacture of paper.

In the machine comprising this invention the barking of the timber is effected by a series of cutters, all of which are stationary relatively to the log or timber which is caused to move through the apparatus by suitable means employed for this purpose.

In carrying out the invention, the cutters are preferably mounted at the same distance from each other around a circular space through which the logs are caused to pass. The said cutters are mounted upon shafts which are adjustable longitudinally and also capable of moving with a pendulum-like motion so that the positions of the cutters may be varied automatically by the size of the log passing through the apparatus; this automatic action being regulated by the adjustability of the devices for receiving, supporting and feeding the logs, as will be hereinafter more particularly described.

In the accompanying drawings, Figure 1 is an end elevation and partial section of the apparatus embodying my present invention. Fig. 2 is a side elevation. Fig. 3 is a plan. Fig. 4 is a longitudinal section on an enlarged scale of the bearings for the cutter shaft. Fig. 5 is a side elevation and partial section of the parts employed to adjust the tension and determine the position of the cutter members. Figs. 6 and 7 respectively are a plan and side elevation of the same. Fig. 8 is a section through the disks *i i*. Fig. 9 is a central vertical section taken through the hollow arm 3. Fig. 10 is a central longitudinal section taken through the hollow shaft 4 and Fig. 11 is a transverse section taken through the revoluble disks 3 and associated parts.

Referring particularly to the drawing, the parts of the apparatus employed for receiving, supporting and feeding the log during the barking operation preferably comprise a plurality of pairs of conical, fluted disks in-

dicated at 1, 1, the sides of smaller diameter, each of which is arranged to abut against the outer surface of the hollow arm 3 in which each pair of disks 1 is mounted upon a shaft 2; it being understood that there is a plurality of these hollow arms 3 and at the free end of each of which a pair of disks 1 is mounted as hereinbefore described. Each of the hollow arms 3 is integral with or secured to a hollow shaft 4 provided with hollow trunnions 5 in which the said shaft is supported by the bearings 6 provided in the uprights 7 of the frame of the apparatus.

Through each of the hollow shafts 4 there extends a shaft 8 which also passes through the trunnions 5 and is journaled therein. A chain gear *a* is employed within each of the hollow shafts 4 and each chain *a* passes over a chain-wheel *b* on the shaft 8 and a similar chain-wheel *c* on the shaft 2 within the hollow arm 3, and by means of which the shaft 2 and disks 1 thereon are revolved from the shaft 8 and which latter is turned by any suitable motor.

As will be apparent from Fig. 2, the hollow shafts 4 are mounted one above the other in pairs at opposite ends of the apparatus and the disks 1 in pairs are correspondingly arranged to lie one above the other, and connected to the hollow shafts 4 are segmental gears indicated at 9; the gear 9 on one shaft 4 meshing with the segmental gear 9 on the other hollow shaft 4 of each pair of hollow shafts so that the hollow arm 3 and the disks 1 of each pair will always maintain a like distance from the center of the log passing through the apparatus.

It will be understood that the shafts 8 may be driven as hereinbefore stated by any suitable mechanism, the speed of which may be varied to meet the requirements of the speed that it is desired to impart to the log in passing through the apparatus. I also employ a plurality of cutters indicated at 10 and each of which is provided with a series of teeth indicated at *d*; it being understood however, that the particular form of cutter comprises no feature of my present invention inasmuch as any desired type of cutter may be employed. Preferably there is a series of cutters arranged on both sides of the main frame 17 of the apparatus, the cutters of each of these series being mounted as hereinafter described, to assume a circular relationship in order that the entire surface of the log may be operated upon, and

the alternate cutters in each series thereof are preferably arranged in different planes so as to bring the cutters as closely together as possible. Each cutter 10 is secured to a shaft 11 which latter is journaled in a sleeve 12 connected to the outer end of which is an electric or other motor indicated diagrammatically at 13. The sleeve 12 is mounted in any suitable guide preferably a sleeve indicated at 14, and the sleeve 14 is provided in a suitable position with trunnions 15 adapted to fit into bearings 16 secured in the main frame 17 so that the cutter shaft may be turned or oscillated upon the trunnions 15 with a movement similar to that of a pendulum. Each sleeve 12 is made adjustable relatively to the bearing 16 at a point 20 by means of a spring-link 19 which may be moved longitudinally to determine the position of the sleeve 12 and consequently that of the shaft 11, and this spring-link member 19 may be secured in the position in which it is set by means of the screw-bolts *e* or otherwise.

As will be apparent particularly from Fig. 4 of the drawing, each cutter together with its shaft, the sleeves 12 and 14, the motor for turning the shaft 11 and the spring-link 19 form a unitary structure which may be termed a barker member.

The main frame 17 preferably has the shape of a wide ring which is U-shaped in cross section, with the opening between the members of the U-shaped frame facing the center of the ring. Now in the barking operation, the log is fed through the ring by the disks 1 and the bark is removed by the cutter members, each set of which is divided into two planes as hereinbefore indicated and as shown in Fig. 2, so that the cutters may be located as closely as possible to each other when the log to be operated upon is of a small diameter.

As hereinbefore stated, each cutter member may be oscillated on the trunnions 15 and moved longitudinally by sliding the sleeve 12 within the sleeve 14. The length of the sliding movement or longitudinal adjustment is evidently dependent upon the distance between the connecting point of the spring-link 19 with the sleeve 12 and the point 20, which distance must be so adjusted that the medium rotary plane of the cutter for all positions of the same, passes approximately through the center line of the log; this feature being of special importance in reducing the loss of wood to a minimum during the barking operation.

On each side of the main frame 17 I employ a rotatable ring. These rings are indicated respectively at 21 22, and are preferably concentric with the frame and supported upon rollers 17* which latter are mounted in the said frame, and on each of the said rings is provided an arm 23 24 re-

spectively, which extend upwardly therefrom. The arms 23 24 are connected at their upper ends by a rod 25 which latter is provided centrally with a pin 26. This pin 26 is adapted to pass into and operate within a slot in the extremity of the central arm 29 of a three-armed lever; the other arms 30 of which lever are connected respectively with the hollow shafts 4 4 at the opposite ends of the apparatus by links 31 and the arms 32, which latter extend upwardly from the said hollow shafts 4.

For the sake of clearness the parts indicated by 27 to 32 inclusive, are illustrated on an enlarged scale in Figs. 5, 6 and 7. The lever whose arms are indicated by 29 and 30 is pivotally connected to the frame 17 as indicated at 28, and the rings 21 22 are yieldingly connected by coil springs 27 with the spring-links 19 of each of the barker members so that by the said ring and lever mechanism, all the cutters are substantially adjusted by the position of the disks 1, which as will be understood, is determined by the size of the log at the time the same is passed into the apparatus.

The means for delivering the bark preferably comprise two curved converging tubes 35 extending upwardly from the frame 17 and communicating with a common exit tube 36, in which in any suitable position there is provided a fan 39 inclosed within the casing 37. The bark is caused to leave the apparatus through the frame 17 and the tubes 35 and 36 by the action of the said fan.

For the sake of clearness but one cutter has been shown in Fig. 1 and but one of each series of cutters has been shown in Fig. 2.

The essential feature of the invention it is believed will be fully understood from the drawing and description without further illustration; the essential feature consisting in the peculiar position in which the cutter shafts are placed with relation to the log in passing through the apparatus and in the possibility of moving the cutters and their shafts longitudinally and at the same time transversely of the log to automatically adjust the same to the positions required for different sized logs.

In the operation of the hereinbefore described wood-barking apparatus, the logs from which the bark is to be removed are first passed into the machine between the fluted disks indicated at 1 which latter by the construction hereinbefore described, are automatically adjusted to the required position to bear against the opposite surfaces of the log, whereupon the shafts 8 are turned by any suitable power to drive the disks 1 by means of the chain-gears *a*. Likewise the motors 13 are started, which as will be understood, revolve the cutting tools which are automatically maintained against the

surface of the log intermediate of the disks 1 by the construction as hereinbefore described. The cutting tools are of such a nature and are so arranged as to extend entirely around the log, thereby removing substantially all the bark therefrom which is chopped up into comparatively small particles, so small in fact as to be readily handled by the blower apparatus which draws the chips of bark from beneath the frame 17 through the diverging tubes 37 to the common discharge tube 36, thence away to any suitable place of deposit.

I claim as my invention:

1. In a wood-barking machine and in combination, a frame, a plurality of cutters, a shaft upon which each cutter is mounted, means whereby each cutter shaft is so mounted in the said frame as to be longitudinally adjustable and movable transversely of the path of a log to be barked, and means for receiving, supporting and feeding a log during the barking operation.

2. In a wood-barking machine and in combination, a frame, a plurality of circularly disposed cutters, a shaft for each cutter, means for rotating each cutter shaft, means whereby each cutter shaft is so mounted in the said frame as to be longitudinally adjustable and movable transversely of the path of a log in the machine, and means for receiving, supporting and feeding a log through the machine.

3. In a wood-barking machine and in combination, a frame, means for receiving, supporting and feeding a log to be barked, a plurality of cutters circularly disposed around the periphery of the log, a shaft for each cutter, a sleeve in which the said shaft is journaled, a second sleeve in which the aforesaid sleeve is longitudinally adjustable and means whereby the said second sleeve is pivotally mounted in the said frame so that the cutter shaft and cutter may swing toward and away from the log in the barking operation.

4. In a wood-barking machine and in combination, a frame, means for receiving, supporting and feeding a log through the machine, a plurality of cutters circularly disposed around the periphery of the log, a shaft for each cutter, a sleeve in which the said shaft is journaled, a motor secured to the said sleeve and connected to the said shaft, a second sleeve in which the aforesaid sleeve and its cutter shaft are longitudinally adjustable, means for determining and securing the aforesaid sleeve in position in the said second sleeve and means whereby the said second sleeve is pivotally mounted in the said frame so that the same together with the first aforesaid sleeve, the cutter

shaft and its cutter may be given a swinging movement transversely of the log.

5. In a wood-barking machine and in combination, a frame, means for receiving, supporting and feeding a log through the machine, a plurality of cutters circularly disposed around the periphery of the log, a shaft for each cutter, a sleeve in which the said shaft is journaled, a motor secured to the said sleeve and connected to the said shaft, a second sleeve in which the aforesaid sleeve and its cutter shaft are longitudinally adjustable, an adjustable spring-link between the cutter shaft and the frame for guiding the said cutter shaft, means whereby the said second sleeve is pivotally mounted in the said frame so that the same together with the first aforesaid sleeve, the cutter shaft and its cutter may be given a swinging movement transversely of the log, and means for forcing the said cutters against the periphery of the log.

6. In a wood-barking machine and in combination, a frame, means for receiving, supporting and feeding a log through the machine, a plurality of cutters, a shaft for each cutter, means for so mounting each cutter shaft and its cutter in the said frame that the said cutter shaft and its cutter are adjustable longitudinally and are also movable laterally of the log, means for maintaining the said cutters against the periphery of the log and means controlled by the aforesaid means for receiving, supporting and feeding a log for adjustably determining the tension under which the last aforesaid means operate.

7. In a wood-barking machine and in combination, a frame, means for receiving, supporting and feeding a log through the machine, a plurality of cutters, a shaft for each cutter, means for so mounting each cutter shaft and its cutter in the said frame that the said cutter shaft and its cutter are adjustable longitudinally and are also movable laterally of the log, a ring revolvably mounted in said frame, a plurality of springs each connecting one of the means in which a cutter shaft is mounted with the said ring, and means controlled by the said means for receiving, supporting and feeding a log for swinging the said ring to vary the tension under which the said springs act upon the said cutter shafts.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE SPAAK.

Witnesses:

HJALMAR ZETTERSTROM,
ROBERT APELGREN.