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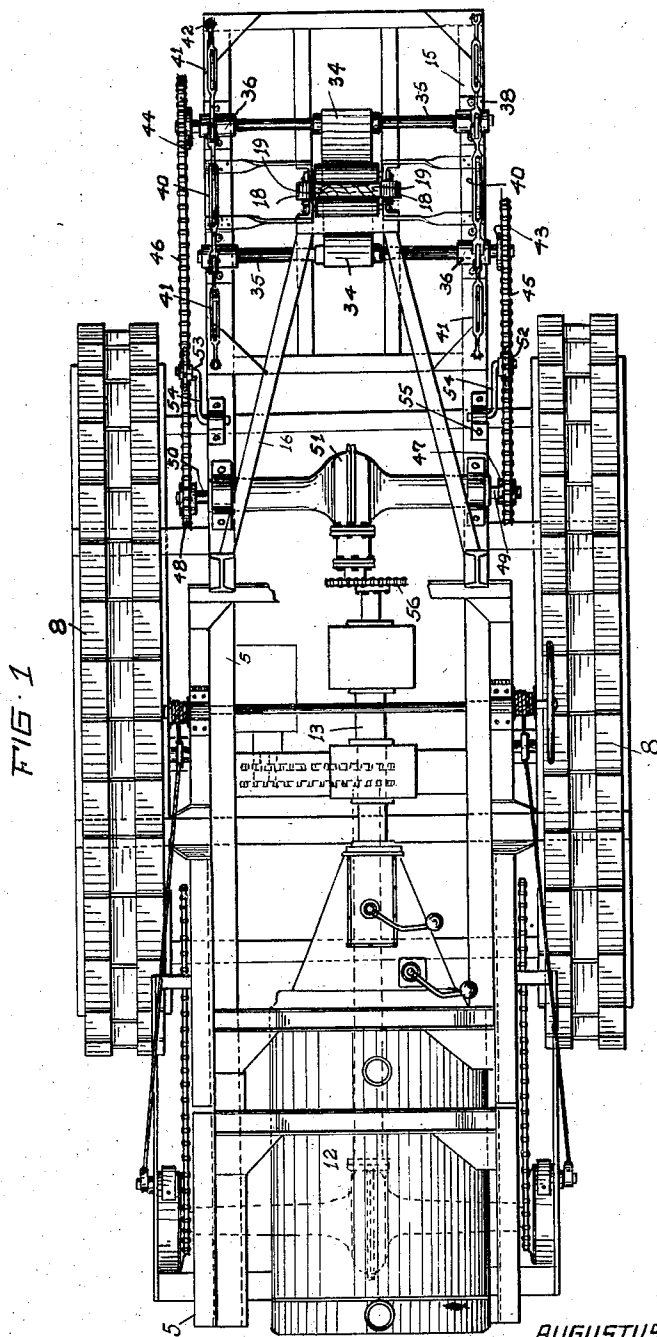
A. J. PENOTE

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TAMPER MECHANISM

Filed March 12, 1928

3 Sheets-Sheet 1



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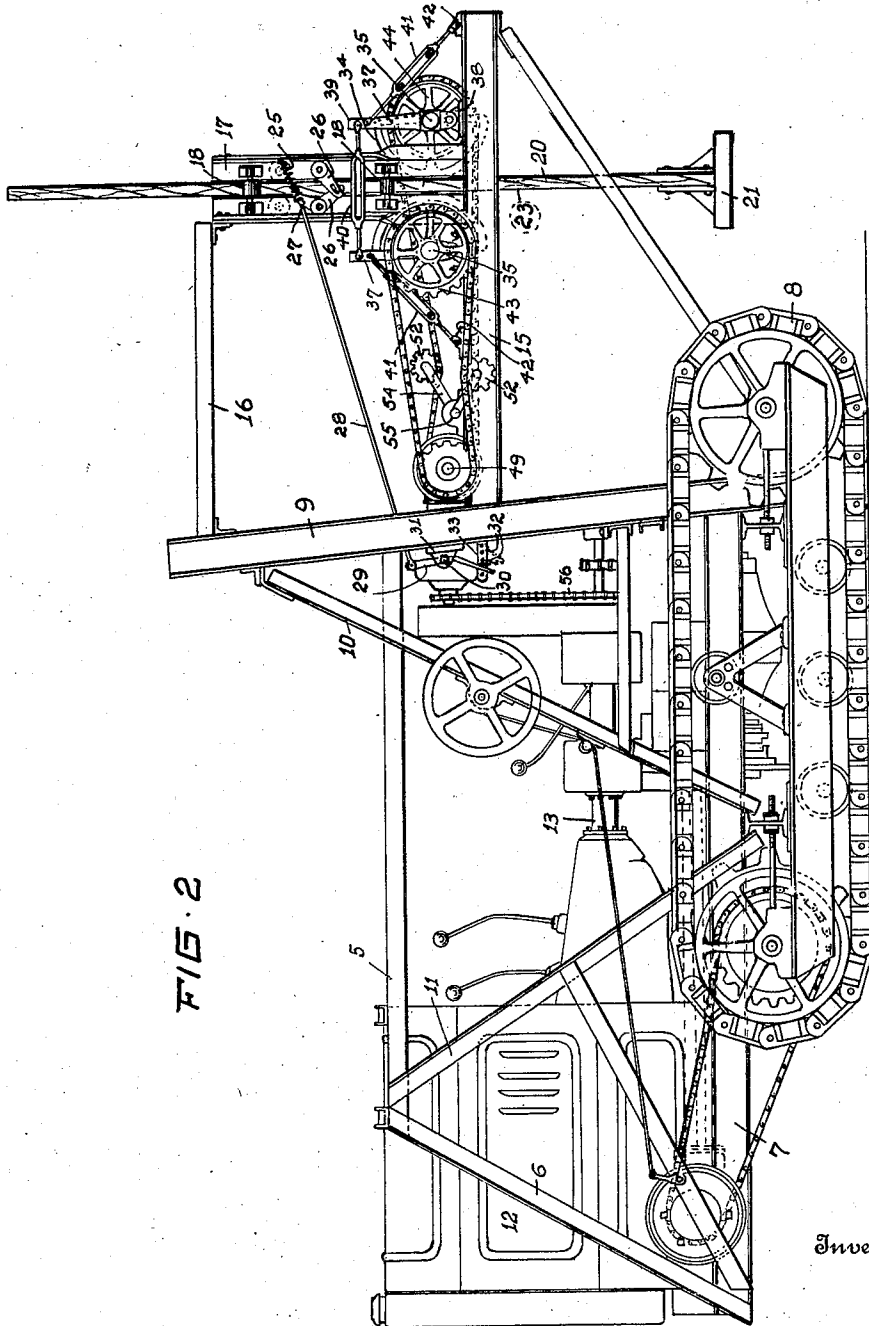
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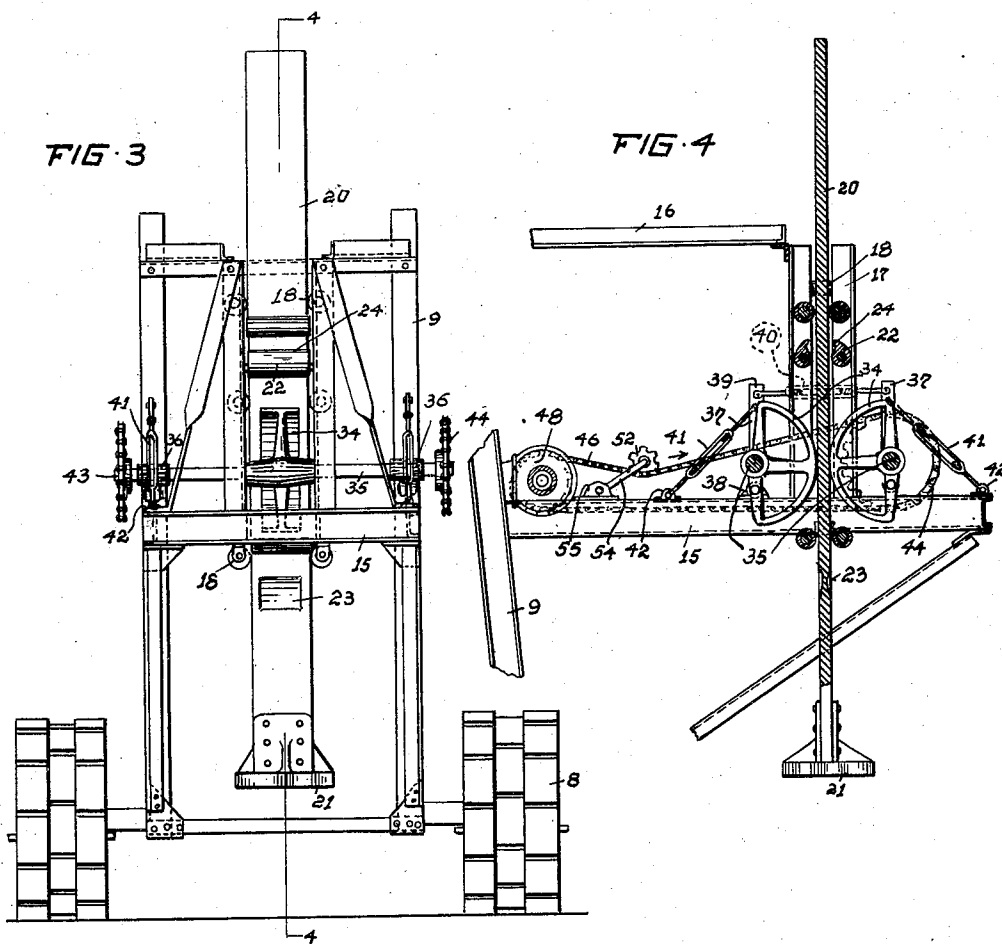
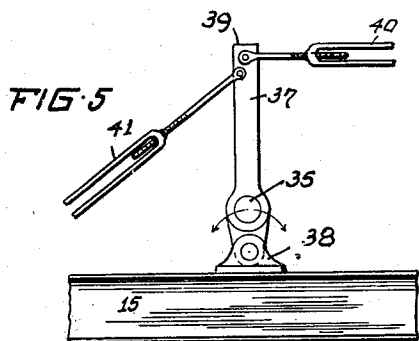
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TAMPER MECHANISM

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3 Sheets-Sheet 3



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TAMPER MECHANISM

Application filed March 12, 1928. Serial No. 260,913.

This invention relates to tamper mechanism and more especially to actuating mechanism for a tamper bar of the character in use which alternately raises the tamper bar to a certain height and releases the bar to permit the tamper to fall by gravity and thereby produce the impounding action intended by such machines.

The present machine improves the means of applying power for lifting the said tamper element alternately, as will be hereinafter explained. It is an object of my invention to actuate gripping members at opposite sides or edges of the tamper element by means of rotating shaft members in parallelism, and to drive such shaft members from opposite sides of the machine. That is to say, one of said shaft members carrying a gripping member thereon will be driven by a drive element at one end of said shaft, while the other shaft member will be driven from a drive element on the opposite end thereof and on the opposite side of the machine from that on which the first drive element is positioned. This arrangement results in advantageous balancing of power drive on opposite sides of the machine and in favorable relief from unbalanced strains upon the tamper frame.

It is a further object of my improved tamper actuating mechanism that it makes feasible the use of chain drive elements for actuating the said shaft members, providing a chain on either side of the tamper bar, one chain, that actuating the gripping member nearest the power source, being relatively short, and the other chain, actuating the gripper farthest from said power source, being longer and travelling in the opposite direction from the first, thereby balancing the strain upon the tamper frame.

It is a still further object of my invention to render the actuating means for the two gripper shafts (which always rotate in opposite directions), readily adaptable to a varying distance between the two gripping members, so that the latter may be adjusted toward and from each other for delicately engaging the heavy tamper bar at the most advantageous distance between them, both for adjustment to varying distance between them

to accommodate the change in thickness of the tamper bar due to wear, and to variation because of temperature, or other reasons.

It is also a further object of my improvements to provide such gear connections between the tamper grips and the power source that will make possible adjustment of both sides of the tamper elements when variation between the gripper members is essential, and to do this without in any way interfering with the efficiency of the drive mechanism employed.

With the above and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts to be hereinafter more fully described, recited in the appended claims, and illustrated in the accompanying drawings, in which,—

Figure 1 is a plan view of the machine embodying my improvements;

Figure 2 is a side elevation of the same showing the tamper in raised position;

Figure 3 is a rear elevation of the machine with the tamper raised;

Figure 4 is a view of the tamper and actuating mechanism with related frame parts, shown in section taken in a plane indicated by the line 4—4 of Fig. 3, and

Figure 5 is a detail view showing adjustment means for the gripper elements.

Referring to the drawings in detail, numeral 5 designates a motor-driven vehicle having a supporting frame 6 comprising the base 7, and driven by the pair of traction belts 8. A pair of inclined masts 9 is mounted upon the base 7 at the rear of the machine, these masts being braced by bars 10. Other upright frame parts 11 at the front end of the machine serve to support and brace the engine 12, and gearing connecting the engine shaft 13 with various parts of the machine to be actuated by this source of power.

The tamper frame 14 is supported from and extends rearwardly from the said masts 9, and is braced by lower brace bars 15 and upper, substantially horizontal bars 16 which are directed inwardly somewhat from the masts to the vertical tamper guide 17. The composite guide mechanism 17 comprises two

pairs 18 of roller guides which contact the edges 19 of the tamper bar 20 which carries the heavy tamper foot 21 which falls by gravity upon the ground surface or other material to be operated upon, when released, as will be more clearly explained as the description proceeds. One pair of such rollers is positioned at the upper end of the tamper guide, and the other pair at the lower end of said guide, so that the lateral position of the bar 20 will be very accurately determined.

The tamper frame is provided with means for intermittently raising the tamper bar and releasing it, and is further provided with a stationary pair of pivoted pawls 22 mounted on opposite faces of the bar 20 and directed inward toward the bar, the latter being provided on both faces with cut-out notches 23 with which the pawls 22 may engage. The hooked edges 24 of the pawls are forced toward the bar by the action of a coil spring 25 tending to rock the pawls on their pivots through the agency of interlocked arm members 26, one of which is actuated by an upwardly extending arm 27 having an aperture in the end by which it is connected with a wire or cable 28 extending rearwardly for connection with a manually operated lever 29 pivoted at 30 upon frame member 31, the opposite end of the lever registering with spaced pins 32 upon a suitable support 33, whereby the pawls 22 may be released when desired, to permit the motor actuation of the tamper by other clutch mechanism.

Actuating mechanism for intermittently raising the tamper bar 20 comprises the segmental clutch members 34 mounted on the shafts 35 which are spaced transverse shafts provided with actuating mechanism to be explained later in detail. It is to be noted at this point that these shafts 35 are mounted in bearings 36 in vertical posts 37 of which there are four, each pivoted for movement in a plane in the longitudinal direction of the machine, upon a block 38 mounted upon the frame bar 15 of the forward end of the machine. These posts 37 are arranged in pairs, two at each side of the machine, and the upper ends 39 of each pair are connected together by a turn-buckle 40 and links to make adjustment of the distance between the posts feasible, and thereby delicately setting the distance between the clutch members 34 as may be desired. Opposed to the strain exerted by the turn-buckles 40, links and turn-buckles 41 are provided between each upper end 39 of each post 37, and a block 42 on the bar 15 beyond the foot of the post, as is clearly shown in Figs. 2 and 4, whereby the posts 37 are tightened rigidly in position and at the exact angle desired. This arrangement of the pivoted posts determines the relative position of the clutches 34 carried by the shafts 35.

It is a special feature of my improved actuating mechanism for the tamper bar, that the two clutch members 34 are driven by sprockets at opposite longitudinal sides of the machine. That is to say, the actuating shaft 35 positioned forward of the bar 20 is driven by an end sprocket 43 on the left hand side of the tamper frame, considering the engine 12 as mounted on the front end of the machine, and the shaft 35 rearward of the tamper bar driven by a corresponding sprocket 44 at the right hand side of the machine, the actuating sprockets being oppositely mounted and driven by sprocket chains 45 and 46, of widely different length, whereby the short chain 45 may actuate the forward clutch member 34, while the long chain 46 may actuate the corresponding rearward clutch member. This is shown very clearly in Fig. 4 and in Fig. 2. These chains are driven from forward sprockets 47 and 48 on aligned drive shafts 49 and 50, respectively, which latter are driven from a conventional differential gearing 51 encased, as shown, and as will be clearly understood from the diagrammatic showing in the plan view of Fig. 1.

Evidently, the chain 46 connecting sprockets 44 and 48 will be longer than the chain 45 connecting sprockets 43 and 47, the former driving the rearward clutch member 34 while the latter drives forward clutch 34. For this reason, shafts 35 rotate in opposite direction, as do also shafts 49 and 50, and also chains 45 and 46. This is essential in my improved actuating mechanism to drive the clutch members 34 oppositely and thereby raise the tamper bar 20 when the segmental clutches 34 grip the bar between them on the up stroke, but release the bar to fall by gravity while the segments 34 continue their rotation for 180° out of contact with the bar, as will be obvious.

Heretofore, the practice of driving the clutch shafts by toothed gears on the common end of said shafts and on the same side of the frame has been practically universal. Power has been applied to a gear on one of these shafts, and power for the other shaft transmitted by engagement of gears extending in a common plane longitudinal of the frame and on the two shafts. This method of actuation has had many disadvantages. First, the power has been applied to a single side of the frame which is itself a disadvantage, and second, and most serious of all, the engaged teeth of these driving gears has rendered quite difficult proper adjustment between the shafts carrying the clutch members. It will be evident that the constant engagement of the tamper bar by the driving clutches 34 under great pressure, causes a constant wear of the surfaces of the bar which in a short time decreases the thickness thereof to such an extent that the gripping engage-

ment does not remain positive without suitable adjustment between the segments. It has been difficult in the past to adjust the shafts 35 toward and from each other while at the same time the driving gears above referred to must be correspondingly separated or moved together. I have overcome both of these objections by a novel arrangement of sprocket chain drive which will now be described.

The arrangement of the longer sprocket chain 46 for driving the rearward shaft 35 from one end, and the shorter chain 45 at the opposite side of the frame, results in a very advantageous balanced relation in the driving mechanism, since the driving power on either side is of equal intensity. These chains 45 and 46 may be adjusted, with one run of each somewhat slack, thereby permitting the shafts 35 carrying the clutch members, to be slightly adjusted toward and from the drive shafts 49 and 50, and from each other, the latter adjustment being of great importance, since this permits adjustment of the clutches 34 toward and from each other, to compensate for any variation in the thickness of the tamper bar 20 resulting from any cause. For this reason, the before described mounting of the posts 37 pivotally upon the frame and braced by the turn-buckle elements, is especially provided to delicately adjust the said clutches.

While the arrangement of the long and short drive chains on opposite sides of the tamper frame would permit the adjustment of the clutch members without further provision, a very positive and certain adjustment of the chain may well be made by the provision of small sprockets 52 carried by bearings 53 on the ends of arms 54 which may be pivoted to swing in bearings 55 on the sills 15, preferably between the shafts 49 and 50, and the shaft 35. These sprockets 52 will engage the looser run of the respective chains.

The particular arrangement of the gearing to be used in the tamping machine which I have employed to illustrate the particular actuation of the tamper bar, is not especially concerned with the mounting of the machine as a vehicle or the means of driving the machine or steering it. It may be said, however, that the general arrangement of the driving of the vehicle and steering the same in this machine is generically like that disclosed in my Patent No. 1,553,833 issued September 15, 1925, although this patent uses the conventional arrangement of the driving gears for the clutch shafts on one side of the frame and in a common plane, and further details will not be referred to in this specification. It need only be stated that the shafts 49 and 50 are driven from the differential 51, before referred to, receiving its power from the engine shaft 13 by means of the chain gearing 56.

While I have found the means here shown for adjusting the clutches 34, to be practicable and effective, I do not desire to be limited to this particular means of adjustment. The function which I regard so highly as derived from the arrangement of the sprocket drive of the clutch shafts, is by no means dependent upon the particular adjustment disclosed for the shafts 35. Indeed, it is not essential that said shafts with their clutches 34 shall be mounted upon pivoted posts. They could as well be carried by sliding blocks mounted upon the sills 15 and serve the same purpose, and be used with the same desirable chain drive. Other changes will no doubt suggest themselves to the user, as valuable accompanying features with my novel balanced chain mechanisms for driving the two clutch shafts 35 independently. Neither do I wish to limit my drive mechanism for the tamper to the use of sprocket chains on opposite sides of the bar. Obviously, both chains could be driven and be connected to the separated shafts, and be mounted on the same side of the tamper bar. This latter arrangement, too, would still permit the adjustment of the clutch members 34 which such chains afford.

I do not limit my invention in this case to a vehicular machine. It is evident that the gear drive for the tamper bar is practicable and would be advantageous if occasion required its use on a stationary machine. Many and various changes will be suggested in the use of my tamper mechanism, and in the form, construction and arrangement of parts without departing from the spirit and scope of the invention, or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

Having thus described the invention what I claim as new and desire to secure by Letters Patent of the United States is—

1. A tamper mechanism, comprising a vertically reciprocable bar, a pair of segmental members engaging the opposite faces of the bar, an independent transmission means for each segmental member, and an equalizing driving means connected to both of the transmission means for maintaining constant and equal driving pressures thereon.

2. A tamper mechanism, comprising a vertically reciprocable bar, a pair of segmental members engaging the opposite faces of the bar, independent transmission means for said segmental members arranged at opposite sides of the vertical plane of the bar, and a common equalizing driving device connected to both of the transmission means for maintaining a constant and equal driving pressure through the transmission means to the segmental members.

3. A tamper mechanism, comprising a vertically reciprocable bar, a pair of segmental

- members engaging the opposite faces of the bar, a sprocket wheel connected to each segmental member, a chain for each sprocket wheel, a single equalizing driving means having sprocket wheels for engaging said chains, and means for maintaining the chains taut at all times for maintaining a constant and equal driving pressure upon said segmental members.
4. A tamper mechanism, comprising a vertically reciprocable bar, a horizontal frame through which said bar is adapted to operate, a pair of segmental members carried by the frame and engaging the opposite faces of the bar, a transmission means mounted on each side of the frame and connected independently to said segmental members, and an equalizing driving means mounted on the frame and connected to both transmission means for exerting a constant and equal driving pressure upon said segmental members.
5. Actuating means for a vertically reciprocating bar, comprising a horizontal supporting frame, a pair of segmental members mounted in said frame for engaging opposite faces of said bar for clamping the latter between said members, a sprocket mounted on each of said segmental members but on the opposite sides of said frame, sprocket chains for driving said sprockets in opposite directions, and equalizing driving means connected to both of said sprocket chains for maintaining a constant and equal driving pressure upon said segmental members.
6. A tamper machine, comprising a vehicular frame including a base and a pair of forwardly inclined masts rigidly mounted upon the rear end of said base, driving means mounted on the forward end of said frame, a tamper frame mounted upon said masts and extending rearwardly therefrom, a tamper bar mounted for vertical reciprocation in said tamper frame, transverse parallel shafts rotatably mounted in said tamper frame at the opposite sides of said tamper bar, a pair of segmental clutch elements mounted on said shaft for engagement with the opposite sides of said bar, a sprocket and chain mechanism for each of said shafts, adjusting means for said shafts operable lengthwise of the frame, and differential drive mechanism connected to the driving means at the forward end of the frame and connected to both of said sprocket and chain mechanisms for maintaining a constant and equal driving pressure upon said segmental clutch elements.
7. A tamper machine, comprising a vehicular frame, driving means mounted on the frame, a tamper frame carried by the first frame, a tamper bar mounted for vertical reciprocation in the tamper frame, a pair of segmental clutch elements mounted in the tamper frame at opposite sides of said bar, a shaft for each segmental clutch elements, a sprocket wheel mounted on each shaft, a chain for each sprocket wheel, differential drive means mounted on the tamper frame and connected to said driving means of the first frame and including a pair of oppositely extending shafts, a sprocket wheel on each of said oppositely extending shafts and adapted to receive said chains thereover, and means for maintaining said chains taut at all times whereby said differential driving means and said means for maintaining the chains taut are adapted to maintain a constant and equal driving pressure upon each of said segmental clutch elements.
- In testimony whereof, I have hereunto subscribed my name this 15th day of February, A. D. 1928.
- AUGUSTUS J. PENOTE.