(No Model.) 2 Sheets—Sheet 2.

M. C. NIXON.

CHECK ROWER.

No. 557,315. Patented Mar. 31, 1896.

Fig. 2.

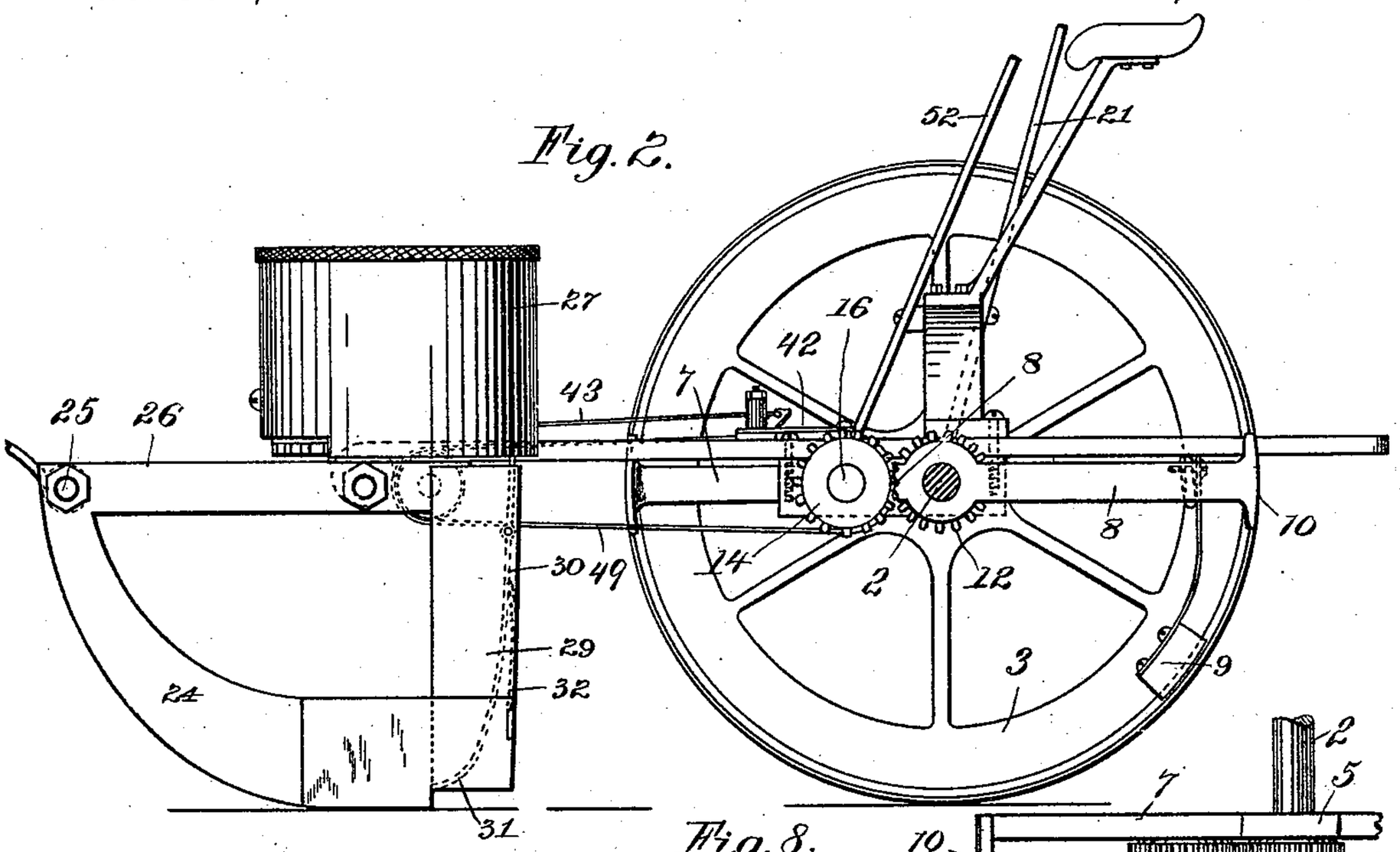


Fig. 4.

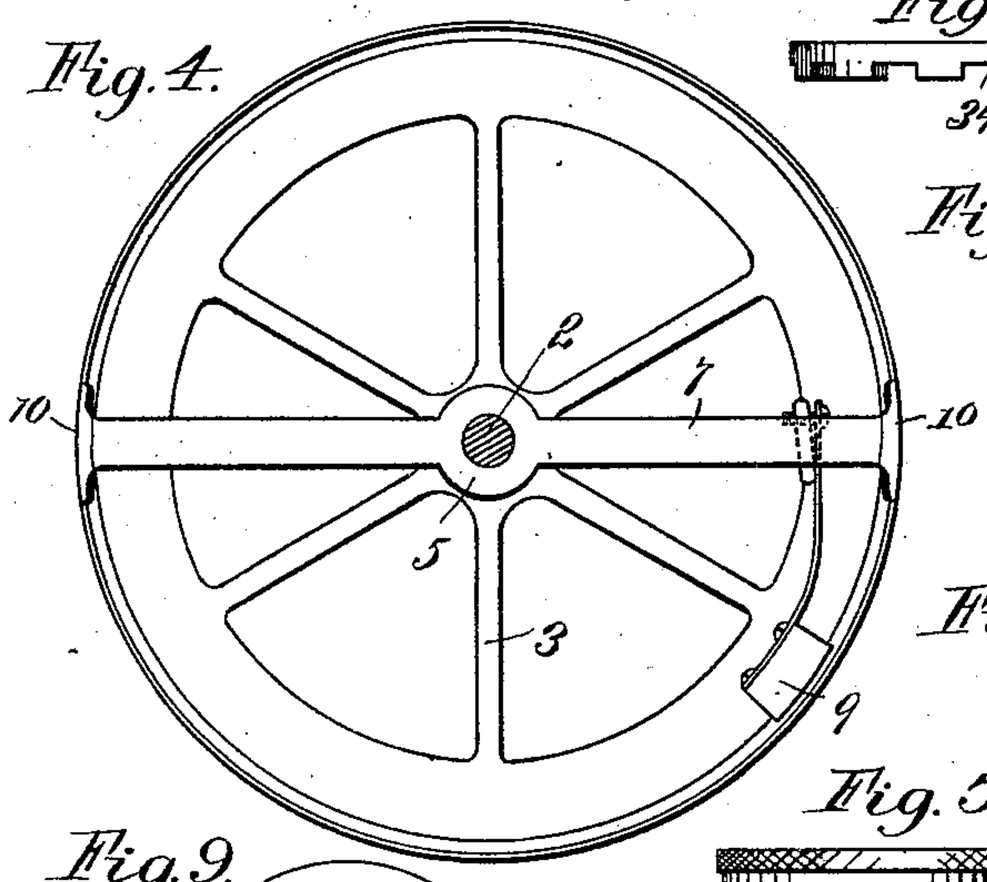


Fig. 8.

Fig. 7.

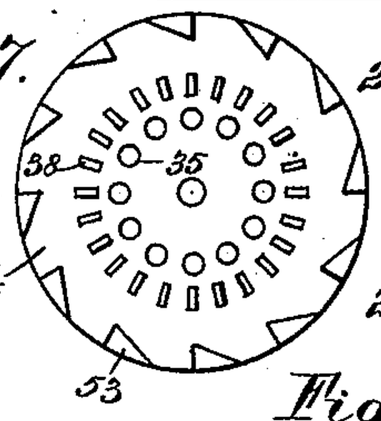
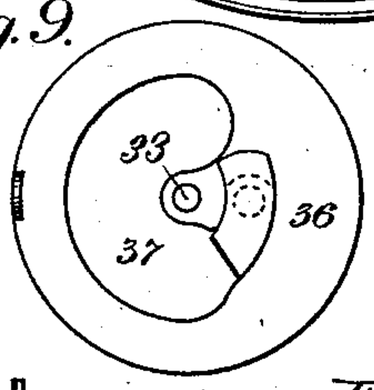


Fig. 3.

Fig. 6.

Fig. 5.

Fig. 9.



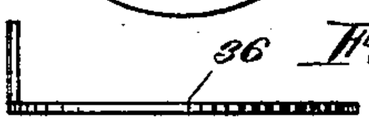
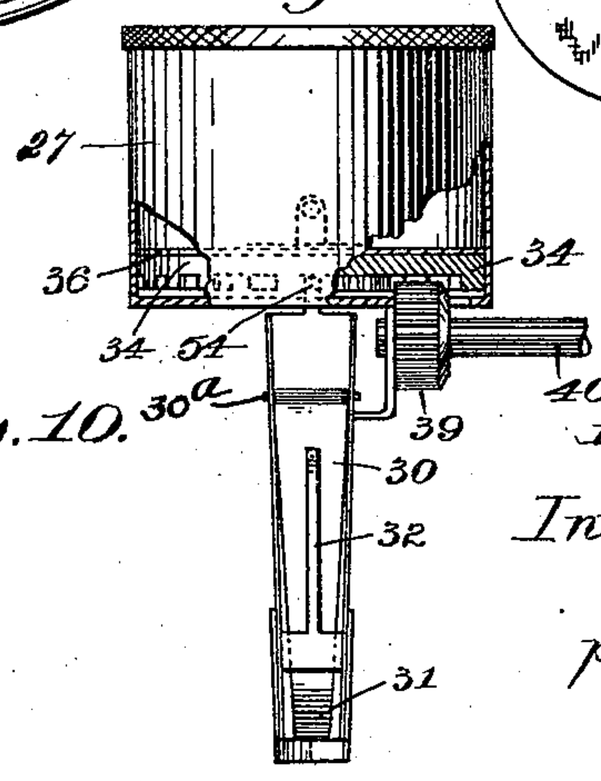


Fig. 10.



Witnesses:

F. Bradbury.

Minnie Thanwald.

Inventor:

Moses C. Nixon.

per: T. D. Merwin

Attorney.

UNITED STATES PATENT OFFICE.

MOSES C. NIXON, OF OMAHA, NEBRASKA.

CHECK-ROWER.

SPECIFICATION forming part of Letters Patent No. 557,315, dated March 31, 1896.

Application filed February 14, 1895. Serial No. 538,456. (No model.)

To all whom it may concern:

Be it known that I, MOSES C. NIXON, of Omaha, Douglas county, Nebraska, have invented certain Improvements in Check-Rowers, of which the following is a specification.

My invention relates to improvements in check-rowers, its object being to provide a machine which will automatically drop the grain to form the hills at proper intervals without the use of a check-rower wire or cord, and which will mark the hills so as to make them easily visible to the eye of the operator in guiding the work of the machine, and also to provide means for immediately correcting any lack of alinement in the work of the machine.

To this end my invention consists generally in providing a machine having the usual carrying-wheels and grain-hoppers and dropping attachments having mechanically-adjustable automatically-operating means. I provide the axle of the machine, which is fixed to the drive-wheels, with a loose sleeve adjacent each wheel, and provided with arms carrying marking devices for indenting the surface of the ground as the machine passes over it. Each sleeve is provided also with a spur-gear engaging a similar gear upon a counter-shaft, which counter-shaft has operative connection with the dropping attachment, so that the markers always have an unvarying relation with the dropping attachment, and no matter how the other operating parts vary in their work will always indicate the exact location of the hills made by the dropper. One sleeve also carries a friction-piece which bears upon the inside of the rim of the adjacent drive-wheel, by which it and the connected counter-shaft are normally driven. This power is sufficient to carry both sleeves and their arms around, and also to operate the dropping attachment connected to the counter-shaft. If, however, from any reason, such as inequalities of the surface over which the drive-wheels pass, the dropping attachment forms the hills out of alinement with those previously made, I provide means for instantly readjusting this mechanism to bring it into correct alinement. I accomplish this by means of differential gears upon the axle and counter-shaft, which may be thrown into operation to vary their relative speeds. These gears are fixed upon the axle and engage similar gears upon the counter-shaft, so that the varying relative motion of the counter-shaft is transmitted through the first-described gears to the marker-arm sleeves, so that they always rotate at the same speed with relation to the counter-shaft. If, therefore, the clutch be thrown into engagement with the smaller gear meshing with the larger upon the counter-shaft, the relative speed of the counter-shaft is diminished and the space between the hills correspondingly increased, the friction-piece slipping backward on the drive-wheel. On the other hand, if the clutch be thrown into engagement with the larger gear upon the axle meshing with the smaller gear upon the counter-shaft, the speed of the counter-shaft is increased and the hills are made close together, and the markers are carried forward more rapidly than the drive-wheels. Thus by throwing the clutch into operation with the appropriate one of the differential gears for a sufficient time any variance in alinement can be accurately and immediately corrected without stopping or checking the speed of the team.

My invention further consists in an improved operative connection between the dropper-disk in the grain-hopper and the stop or check valve in the boot for releasing the grain held in the boot, which has been previously dropped therein through the disk. This consists of a series of cams carried by the disk, which successively engage a spur upon the spring-controlled stop, each serving to move the stop to release the grain held by it, after which it is free to resume its normal position under the tension of its spring until engaged by the next cam. The dropper-disk is geared to a second counter-shaft, which normally has a pawl-and-ratchet connection with a rocker-arm, having a pitman connection with the first-named counter-shaft. By this means a step-by-step intermittent movement is given to the dropper-disk so adjusted as to release the grain or form the hills at exactly the predetermined requisite distance apart. I also provide an alternative belt or continuously-operating connection between the first and second counter-shaft, whereby the dropping attachment is operated continuously so as to deposit the grain in the form of drills instead of hills.

My invention further consists in the special

features of construction hereinafter more particularly described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of my machine, certain of the parts being broken away the better to show the construction. Fig. 2 is a side elevation of the same with one of the drive-wheels removed. Fig. 3 is a detail of the gearing upon the axle and connected counter-shaft. Fig. 4 is a detail of the friction-piece carried by one of the marker-arms by means of which the working parts are operated by the drive-wheel. Fig. 5 is a detail rear elevation of the grain-hopper, its connected boot, and the means for driving its disk, parts of the hopper-wall being broken away to show the interior construction. Fig. 6 is a plan view of the disk. Fig. 7 is a bottom plan view of the same; Fig. 8, an edge view of the same. Figs. 9 and 10 are details of the plate bearing upon the hopper-disk to clear the superfluous grain off from the disk as it rotates and deliver the grain into the boot. Fig. 11 is a bottom plan view of the grain-hopper boot and runner and the connected parts, and Fig. 12 is a detail of the ratchet connection between the first and second counter-shafts.

In the accompanying drawings, A represents the frame of the machine, of ordinary or suitable form, mounted upon a revolving axle 2, and adjacent to the hubs of the drive-wheels 3 are the sleeves 5 and 6. These sleeves carry, respectively, the radial arms 7 and 8, each of these arms being provided with a friction-piece 9 bearing upon the inner surface of the rim of the wheel. Each arm carries a marker 10, of any appropriate or desired form, so positioned as to make an indentation in the surface of the ground as it comes in contact therewith in the rotation of the wheel. The pressure of this friction-piece is sufficient to prevent slip in the ordinary operation of the machine and preserve the adjusted relation of the arms to the drive-wheels, and also to normally drive the connected train of gears and dropping attachment, as hereinafter described. These sleeves carry spur-gears 12 and 13, meshing, respectively, with similar spur-gears 14 and 15 upon the counter-shaft 16, by means of which the counter-shaft is normally operated by means of the friction-piece at a uniform relative speed with respect to the drive-wheels, and the sleeve 6 and its attachments rotated uniformly with the axle.

In order to readjust the operating parts to control the working of the machine, as hereinafter described, I provide means for temporarily varying the relative speed of the counter-shaft with respect to the axle in the following manner: I arrange upon the axle the loose gears 17 and 18, the one being larger and the other smaller than the gears carried by the sleeves above described. Between these loose gears I arrange a clutch 19 sliding on a feather 20 upon the axle and operative in the usual manner by means of a lever 21, so as to be thrust into engagement at will with either of the gears 17 and 18, or to stand in normal mid-position out of engagement with both. Fixed upon the counter-shaft and respectively in mesh with the gears 17 and 18 are the gears 22 and 23, the one being smaller and the other larger than the gears carried by the shaft, which mesh with the gears 12 and 13 above described.

Arranged at the front of the frame of the machine and directly in the paths of the drive-wheels are the runners 24, of the usual form for cutting the channels or furrows in the ground for the reception of the grain. These are connected together preferably by the cross-bar 25 and to the frame by braces 26. Arranged above the runners 24 are the hoppers 27, also of common construction, for the holding of the grain, through the bottom of each of which the opening 28 communicates with the boot 29, extending down to the rear of the runner. In this boot is arranged the pivoted check or stop valve 30. This stop-valve has an inturned end 31, which serves to close the lower end of the boot and prevent the passage of the grain therethrough, being held in closed position by means of the spring 32.

Arranged to rotate around the pin 33 in the bottom of the hopper is the dropper-disk 34 having the series of perforations 35 of ordinary character. On the top of the disk 34 is the fixed plate 36 having a curved slotted opening 37 exposing a portion of the perforations 35, but covering the other perforations, which are above the opening 28. By this means the plate 34 permits the perforations to be successively filled with the grain in the hopper and sweeps off the superfluous grain above the top of the plate, so as to permit only the grain held in the perforations to be carried around and delivered into the boot. The disk 34 is rotative so as to continuously or intermittently, as hereinafter described, deliver the grain into the boot by means of the crown-gear 38 on the bottom of disk 34, the teeth of which mesh with the spur-gear 39 carried by the second counter-shaft 40. This shaft is operatively connected to the counter-shaft 16 so as to give an intermittent or step-by-step motion to the disks or a continuous movement, as desired, the first being obtained by means of a crank action from the counter-shaft 16 transmitted to the counter-shaft 40 with an interposed pawl-and-ratchet connection to give the shaft an intermittent or step-by-step rotary movement instead of an oscillating or rocking movement.

While the crank movement may be obtained by any suitable means, I prefer the construction shown in the drawings. The rocking or oscillating arm 41 pivoted to the frame of the machine is operated by the cam 42 upon the counter-shaft 16. This rocker-arm is connected, by means of the link 43, with the rocker 44 mounted loosely upon the counter-shaft 40 and carrying the pawl 45, which en-

gages the ratchet 46, fixed to the counter-shaft. By this means any desired number of step-by-step movements may be given to the counter-shaft 40 with one revolution of the counter-shaft 16.

In order to give a continuous movement to the counter-shaft 40, I provide the pulleys or sprockets 47 and 48 upon the counter-shafts and connect them by the belt or chain 49. The pulley 47 and the cam 42 are mounted loosely upon the shaft 16, either being operatively connected with the shaft by means of the clutch 50 sliding upon the feather 51 and adapted to engage either by means of the lever 52 or be left in mid or disconnected position from both.

The operative connection between the disk 34 and the stop-valve 30 in the boot 29 consists of cams 53 arranged upon the lower face of the disk 34, or operatively connected therewith, and adapted to successively engage the spur 54 upon the upper end of the stop-valve 30, whereby in the rotation of the disk the stop-valve is turned on its pivot 30^a to successively release the grain held in the boot to form hills.

I claim—

1. In a check-rower, the combination with the dropping attachment and the running-gear of the machine, of the counter-shaft operatively connected with said dropping attachment, the mechanism interposed between said counter-shaft and running-gear for continuously operating said shaft, the mechanism interposed between said counter-shaft and running-gear for imparting a step-by-step movement to said shaft, and the means adapted to be operated to throw either of said mechanisms into or out of action so as to convert said machine at will from a hill-planter to a drill.

2. In a check-rower, the combination with the dropping attachment and the running-gear of the machine, of the counter-shaft operatively connected with said dropping attachment, the mechanism interposed between said shaft and running-gear for continuously operating said shaft, the pawl-and-ratchet mechanism interposed between said shaft and running-gear for imparting a step-by-step movement to said shaft, and the means for throwing either of said mechanisms into or out of action at will.

3. In a check-rower, the combination with the rotating axle and the dropping attachment, of the counter-shaft, the interchangeable gear interposed between said counter-shaft and axle for operating the same at variable speeds, the second counter-shaft operatively connected to said dropping attachment, and the interchangeable driving mechanisms interposed between said first and second counter-shafts for driving said second shaft step by step or continuously, at will.

4. In a check-rower, the combination with the dropping attachment, and the rotating axle of the machine, of the counter-shaft and the interchangeable gearing for varying the relative speed between said shaft and axle, the second counter-shaft operatively connected to the dropping attachment, the driving mechanism between said counter-shafts for continuously operating said second shaft, the mechanism between said shafts for imparting a step-by-step movement to said second counter-shaft, and the means for throwing either of said mechanisms into or out of action so as to convert the machine at will from a hill-planter to a drill.

5. In a check-rower, the combination with the drive-wheel and its axle, of the marker-arm mounted loosely upon said axle, the shoe carried by said arm engaging the rim of said wheel, and the variable-speed gearing adapted to be interposed between said marker-arm and drive-wheel whereby the relative rotative speed of said marker-arm and drive-wheel may be varied.

6. In a check-rower, the combination with the drive-wheel and its axle, of the marker-arm mounted loosely upon said axle and having frictional engagement with said wheel, the dropping attachment, the operative connection between said marking-arm and dropping attachment, and the interchangeable train of gears connected to said dropping attachment, and adapted to be thrown into engagement with said axle and to overcome the frictional engagement of said marker and drive-wheel and to drive said dropping attachment at a different relative speed.

7. In a check-rower, the combination with the dropping attachment and the running-gear, of the machine, of the counter-shaft operatively connected to the dropping attachment, the rocker-arm actuated by the running-gear, and the pawl-and-ratchet attachment interposed between said rocker-arm and said counter-shaft so as to impart a step-by-step movement to said shaft.

8. In a check-rower, the combination with the dropping attachment and the rotating axle of the machine, of the gear-carrying sleeve mounted loosely upon said axle, the friction device carried thereby engaging the adjacent drive-wheel, the counter-shaft driven by said sleeve-gear, the step-by-step driving connection between said counter-shaft and dropping attachment, the differential loose gear connection between said counter-shaft and said axle, and the clutch for locking said loose differential gear on said axle to drive said dropping attachment at a different speed in opposition to the frictional connection of said sleeve-gear with the drive-wheel.

In testimony whereof I affix my signature in presence of two witnesses.

MOSES C. NIXON.

Witnesses:

T. D. MERWIN,

MINNIE THAUWALD.