April 6, 1926. 1,579,330

F. R. LONG ET AL

WHEEL BREAKING MACHINE

Filed Sept. 8, 1922 3 Sheets-Sheet 1

Fig. 1.

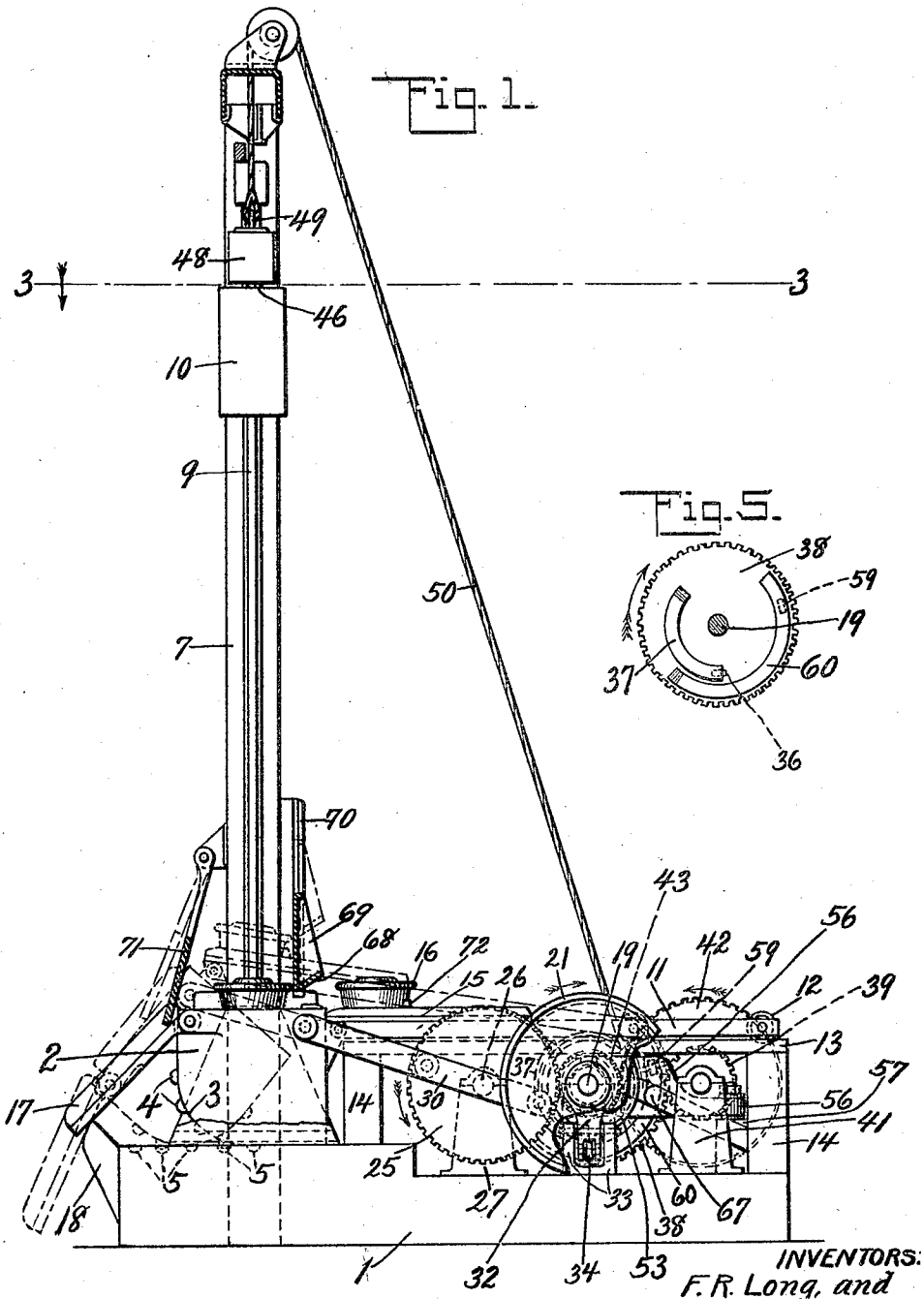

Fig. 5.

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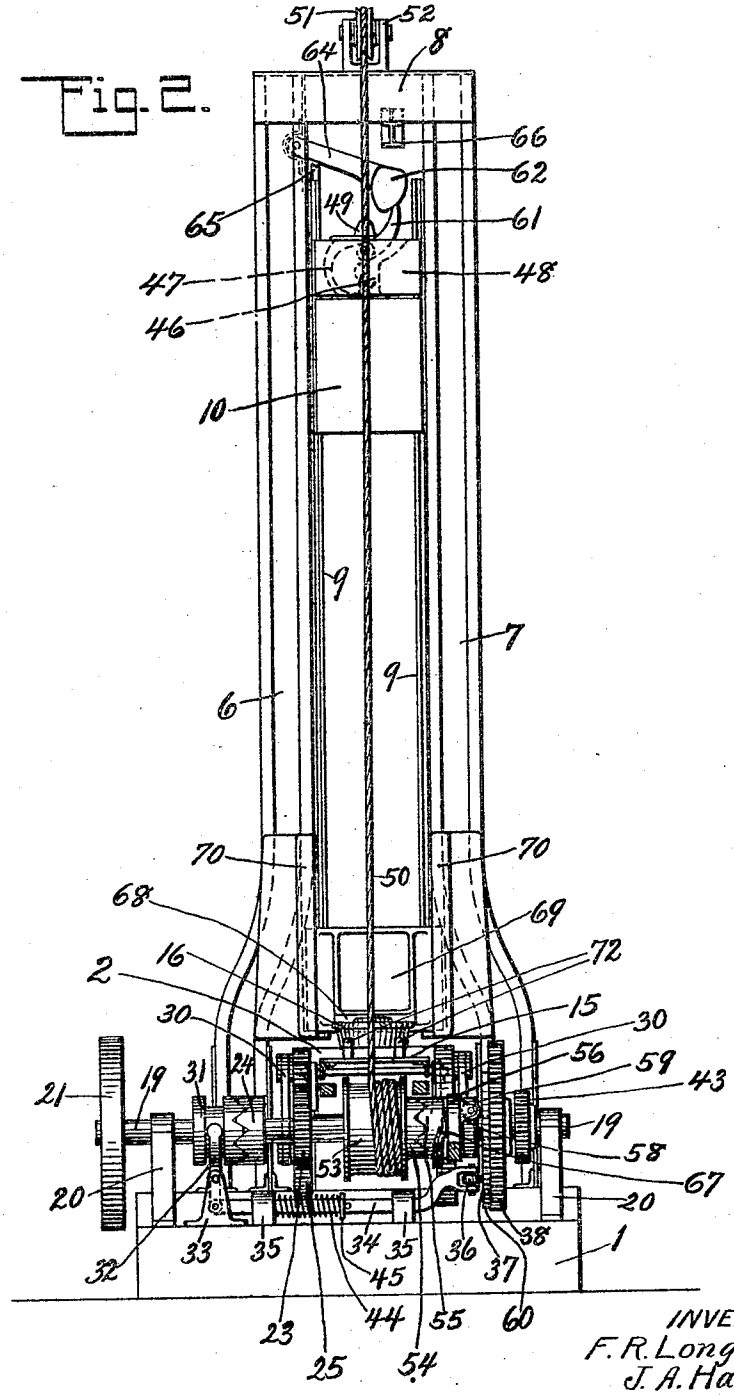
Filed Sept. 8, 1922 3 Sheets-Sheet 2

Fig. 2.



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Filed Sept. 8, 1922 3 Sheets-Sheet 3

Fig. 3.

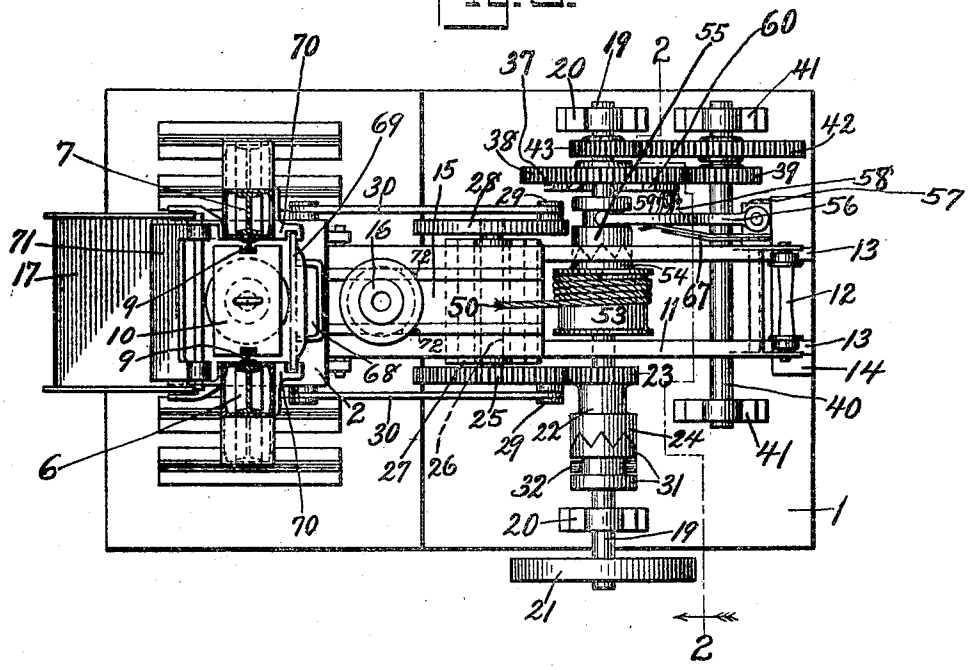
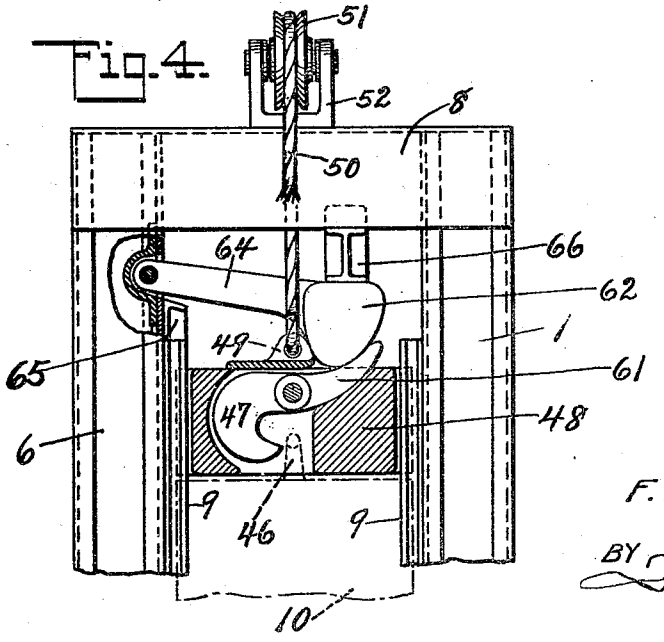


Fig. 4.



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Patented Apr. 6, 1926. 1,579,330

UNITED STATES PATENT OFFICE.

FREDERICK R. LONG AND JAMES A. HARRY, OF BERWICK, PENNSYLVANIA, ASSIGNORS TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

WHEEL-BREAKING MACHINE.

Application filed September 8, 1922. Serial No. 586,962.

To all whom it may concern:

Be it known that we, FREDERICK R. LONG and JAMES A. HARRY, residing at Berwick, in the county of Columbia and State of Pennsylvania, and being citizens of the United States, have invented certain new and useful Improvements in a Wheel-Breaking Machine, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and to use the same, reference being had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

In said drawings:

Fig. 1 is a side elevation, with part shown in section and part broken away, of our improved wheel breaking machine;

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 3, the base being shown in elevation;

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1;

Fig. 4 is a detail view, partly in elevation and partly in section, showing the means for automatically releasing the drop weight; and

Fig. 5 is a view in elevation of the cam wheel which controls the operation of our device.

It is an object of our invention to provide an improved machine for breaking car wheels and it is also an object of our invention to provide a machine in which the action proceeds automatically after a wheel is placed upon a platform adjacent the anvil of the machine. It is also an object of our invention to provide a machine of the type described which shall be continuously operated and in which the various operations shall follow in predetermined sequence at predetermined intervals.

With these and other objects in view, our invention comprises a substantially rectangular base 1 of concrete or other suitable material upon which is supported an anvil 2 substantially rectangular in shape and having a rounded portion 3 provided with a series of projections 4 adapted to engage in depressions 5 in the base. Upon opposite sides of the anvil 2 are placed uprights 6 and 7, joined together at their tops by a cross piece 8 and which carry guides 9 upon which a drop weight 10 is adapted to travel. To one side of the anvil are pivotally secured the connected arms 11 having a wheeled axle 12 at their outer ends adapted to travel upon tracks 13 carried upon uprights 14 mounted upon base 1. Mounted upon the arms 11 is a platform 15 upon which a wheel 16 is placed by a crane or other suitable device (not shown). To the other side of the anvil 2 there is pivotally secured a chute 17 which at its lower end rests upon a projecting supporting and guiding member 18 carried by the base 1. The anvil 2 is adapted to be tilted about the rounded portion 3, the projections 4 engaging the depressions 5 and serving to guide the anvil 2 upon the base 1 in its tilting movement and to insure its return to the proper normal position. To operate the anvil 2 there is provided a main drive shaft 19 mounted in bearings in pedestals 20 and having a pulley 21 to which power is supplied from any suitable source (not shown). Loosely mounted upon the shaft 19 is a combined gear and clutch member 22 comprising a gear 23 and clutch portion 24. The gear 23 is adapted to mesh with a gear 25 mounted upon one end of a shaft 26 carried in bearings on pedestal 27. Upon the other end of the shaft 26 is a crank disk 28 and on the crank disk 28 and gear 25 are studs 29 to which are pivotally connected rods 30 which serve to connect the gear 25 and crank disk 28 to the anvil 2 the rods 30 being pivotally connected to the anvil 2 also. Splined upon the shaft 19 is a clutch member 31 adapted to cooperate with the clutch member 24 and operated by a yoke 32 which is pivotally mounted in a bracket 33 carried by the base 1. To the lower end of the yoke 32 is secured a rod 34 slidably mounted in guide brackets 35 and having at its other end a roller 36 adapted to be engaged by a cam 37 on the toothed cam wheel 38. The cam wheel 38 is rotatably mounted upon the shaft 19 and is provided with gear teeth which mesh with a gear 39

carried by a shaft 40 mounted in bearings in pedestals 41 carried by the base 1. The shaft 40 is driven by a gear 42 which is in engagement with a gear 43 mounted on the shaft 19. The gears 43, 42, 39 and cam wheel 38 form a reduction gearing which serves to drive the cam wheel 38 at a predetermined speed less than the speed of the shaft 19. Engagement of the cam 37 with the roller 36 will cause the bar 34 to be shifted, operating the yoke 32 to engage clutch member 31 with the clutch member 24 causing rotation of the gear 23 and gear 25 and crank disk 28 thereby causing the tilting of the anvil 2. The length of the cam 37 is sufficient to hold the clutch members 31 and 24 in engagement long enough to cause a complete rotation of the gear 25 thus causing the anvil 2 to be tilted to its extreme position and returned to its normal position after which the cam 37 will be moved past the roller 36 and permit the clutch members 31 and 24 to be disengaged by the action of the spring 44 which surrounds the bar 34 and which is confined between a guide bracket 35 and a fixed stop 45 on the bar 34.

The drop weight 10 is provided at its upper end with an eye 46 which is adapted to be engaged by a hook 47 pivotally mounted in a counterbalance weight 48. The counterbalance weight 48 is provided with an eye 49 to which is secured a cable 50 which passes over a pulley 51 mounted in a bracket 52 secured upon the cross member 8. The other end of the cable 50 is wrapped about a drum 53 which is rotatably mounted on the shaft 19 and is provided with a clutch portion 54. The clutch portion 54 is adapted to be engaged by a cooperating clutch member 55 splined upon the shaft 19 and operated by a yoke 56 which is pivotally mounted at its other end upon a bracket 57 carried by the base 1. Secured to the yoke 56 is a bracket 58 in which is mounted a roller 59 adapted to be engaged by a cam 60 carried by the cam wheel 38. Engagement of the roller 59 by the cam 60 will cause the engagement of the clutch members 55 and 54, causing the drum 53 to be operated by the shaft 19 and the cable 50 to be wound about the drum 53 raising the drop weight 10 in its guides 9. The cam 60 is of sufficient length to hold the clutch members 54 and 55 in engagement until the drop weight 10 is raised far enough to cause the projecting end 61 of the hook 47 to be engaged by the weighted end 62 of an arm 64 which is pivotally mounted on the side member 6. Engagement of the weighted end 62 with the hook 47 will cause the hook to be rotated about its support and disconnected from the eye 46 of the drop weight 10 permitting the drop weight 10 to fall. The arm 64 is normally held in a position in which it will engage with the hook 47 by an extension 65 of one of the guides 9. To insure that the weighted end 62 will operate the hook 47 there is provided a stop 66 secured to the cross piece 8 which will engage the weighted end 62 when the counterbalance weight 48 is at the upper limit of its travel. The cam 60 will be disengaged from the roller 59 as the counterbalance weight reaches its upper limit of travel whereupon spring 67 will operate the yoke 56 to disengage the clutch members 54 and 55 permitting the counterbalance weight 48 to fall unwinding the cable 50 from the drum 53 and bringing the hook 47 into engagement with the eye 46 in the drop weight 10.

The cams 37 and 60 are so positioned on the cam wheel 38 and with respect to the rollers 36 and 59 that, in operation, the clutch members 55 and 54 will be engaged slightly in advance of the engagement of the clutch members 31 and 24 so that the drop weight 10 will be raised from the anvil 2 a short distance before the tilting of the anvil 2 is started. As the anvil 2 is tilted from the position shown in full lines in Fig. 1 to the position shown in dotted lines in the same figure by the operation of the crank disk 28 and gear 25, the arms 11 are raised, as the corner of the anvil to which the ends of the arms are connected is raised, and at the same time they are moved forward the rollers 12 traveling on the tracks 13 so that a wheel 16 placed upon the platform 15 will be brought into engagement with the inclined surface 68 of a shield 69 which is slidably mounted in guide 70 carried by the side members 6 and 7. The wheel 16 is prevented from sliding on platform 15 by stops 72 so that as the platform and wheel are moved forward the shield 69 is raised and the wheel passes beneath the shield and to a position between the uprights 6 and 7, the shield then falling in back of the wheel. The wheel which had been previously placed upon the anvil 2 and which had been broken by the dropping of the drop weight 10 is discharged from the anvil 2 down the chute 17 by the tilting of the anvil 2, the anvil 2 in its tilting movement raising a guard 71 pivotally secured to the uprights 6 and 7. As the anvil 2 is returned to its normal position, the arms 11 will travel along the rails 13 bringing the wheel 16 into engagement with the shield 69 and causing the wheel 16 to be slid along the platform 15 and on to the anvil 2, the wheel 16 being held in a position between the upright members 6 and 7 so that upon the return of the anvil 2 to its normal position, the wheel 16 will have been shifted from its position on the platform 15 to a position on the anvil 2 beneath the drop weight 10. Upon the return of the anvil 2 to its normal position the clutch

members 31 and 24 are disengaged by the movement of the cam 37 beyond the roller 36. The drop weight 10 is meanwhile being raised to a position in which the hook 47 will be disengaged from the eye so as to release the drop weight 10 to fall upon the wheel 16 which has been placed upon the anvil 2. Upon release of the drop weight 10 the cam member 60 moves beyond the roller 59 permitting the spring 67 to disengage clutch members 55 and 54 and allowing the counterbalance weight 48 to bring the hook 47 into engagement with the eye 46 in the drop weight 10. Meanwhile another wheel has been placed upon the platform 15 and engaged with the stops 72 so that upon the engagement of the cams 60 and 37 with the rollers 59 and 36, the device is ready to repeat the operation. It will be noted that in the operation of our device it is only necessary to place the wheels to be broken upon the platform 15, all the other operations of the device taking place automatically in the proper sequence at predetermined intervals so long as power is applied to the drive shaft 19.

What we claim is:

1. In a wheel breaking machine, an anvil to hold the wheel to be broken and automatically operating means adapted to tilt said anvil to discharge the broken wheel and to return the anvil to normal position.

2. In a wheel breaking machine, an anvil to hold the wheel to be broken, a drive shaft, means operated by said drive shaft to tilt said anvil and to return it to normal position and means adapted to connect said operating means and said drive shaft.

3. In a wheel breaking machine, an anvil, a drop weight, means to raise drop weight and tilt said anvil operating said weight and anvil automatically in succession, said means tilting said anvil when said drop weight is raised.

4. In a wheel breaking machine, an anvil, a drop weight, means to raise said drop weight, means to tilt said anvil, a drive shaft adapted to operate said means and means operated by said drive shaft adapted to engage said operating means with said drive shaft.

5. In a wheel breaking machine, a tiltable anvil, a drop weight cooperating with said anvil, a drive shaft and means adapted to operate said drop weight and anvil from said drive shaft automatically in succession at predetermined intervals.

6. In a wheel breaking machine, a tiltable anvil, a drop weight cooperating with said anvil and means operating said drop weight and tilting said anvil at predetermined intervals.

7. In a wheel breaking machine, a drop weight, means for raising said drop weight having a hook adapted to engage said drop weight and a pivotally supported weight adapted to engage said hook to release said drop weight.

8. In a wheel breaking machine, a drop weight, guides for said drop weight, means for raising said drop weight having a hook adapted to engage drop weight, a weight pivotally mounted on said guides adapted to engage said hook to release said drop weight and means limiting the movement of said pivotally supported weight.

9. In a wheel breaking machine, an anvil to hold the wheel to be broken, a drop weight cooperating with said anvil and automatically operating means adapted to raise the drop weight and tilt the anvil to discharge the broken wheel.

10. In a wheel breaking machine, an anvil tiltable to discharge a broken wheel, a drop weight adapted to cooperate with said anvil, a platform to support the wheel to be broken, said platform being shifted upon the tilting of the anvil to bring the wheel beneath the drop weight and means engaging the wheel to move the wheel from the platform to the anvil as the anvil is returned from tilted position.

11. In a wheel breaking machine, an anvil to hold the wheel to be broken, a drive shaft, means operated by said drive shaft to tilt said anvil and return it to normal position and a cam wheel operated by said drive shaft adapted to hold said operating means connected to said drive shaft for a complete operation of said anvil.

12. In a wheel breaking machine, an anvil to hold the wheel to be broken, a drop weight adapted to cooperate with said anvil, means to tilt said anvil and to return it to normal position, means to raise said drop weight, a drive shaft, and a cam wheel operated by said drive shaft adapted to engage said operating means with said drive shaft to raise said drop weight and cause a complete operation of said anvil.

13. In a wheel breaking machine, an anvil to hold the wheel to be broken, a drive shaft, a crank shaft, links connecting said anvil and crank shaft, a gear carried by said crank shaft, a gear loosely mounted on said drive shaft and engaging the gear on said crank shaft, a clutch adapted to connect the drive shaft to the gear mounted thereon and a cam wheel operated from said drive shaft adapted to operate said clutch at predetermined intervals.

14. In a wheel breaking machine, a tiltable anvil, a platform pivotally connected to said anvil and a shield adapted to be raised by a wheel on the platform as the platform is moved forward upon tilting of the anvil, said shield being adapted to engage the wheel as the platform and anvil are returned to normal position whereby the wheel is moved from the platform to the anvil.

15. In a wheel breaking machine, a tiltable anvil, a drop weight cooperating with said anvil, a platform pivotally connected with said anvil and a shield adapted to be raised by a wheel on the platform when said anvil is tilted, said shield being adapted to engage the wheel and hold it in position beneath the drop weight as the anvil is returned to normal position.

16. In a wheel breaking machine, a tiltable anvil, a drop weight adapted to cooperate with said anvil, a platform for holding the wheel to be supplied to the anvil and automatically operated means adapted to raise said drop weight and operate said anvil and platform to discharge a wheel from said anvil and place a wheel from said platform on said anvil.

In witness whereof we have hereunto set our hands.

FREDERICK R. LONG.
JAMES A. HARRY.