

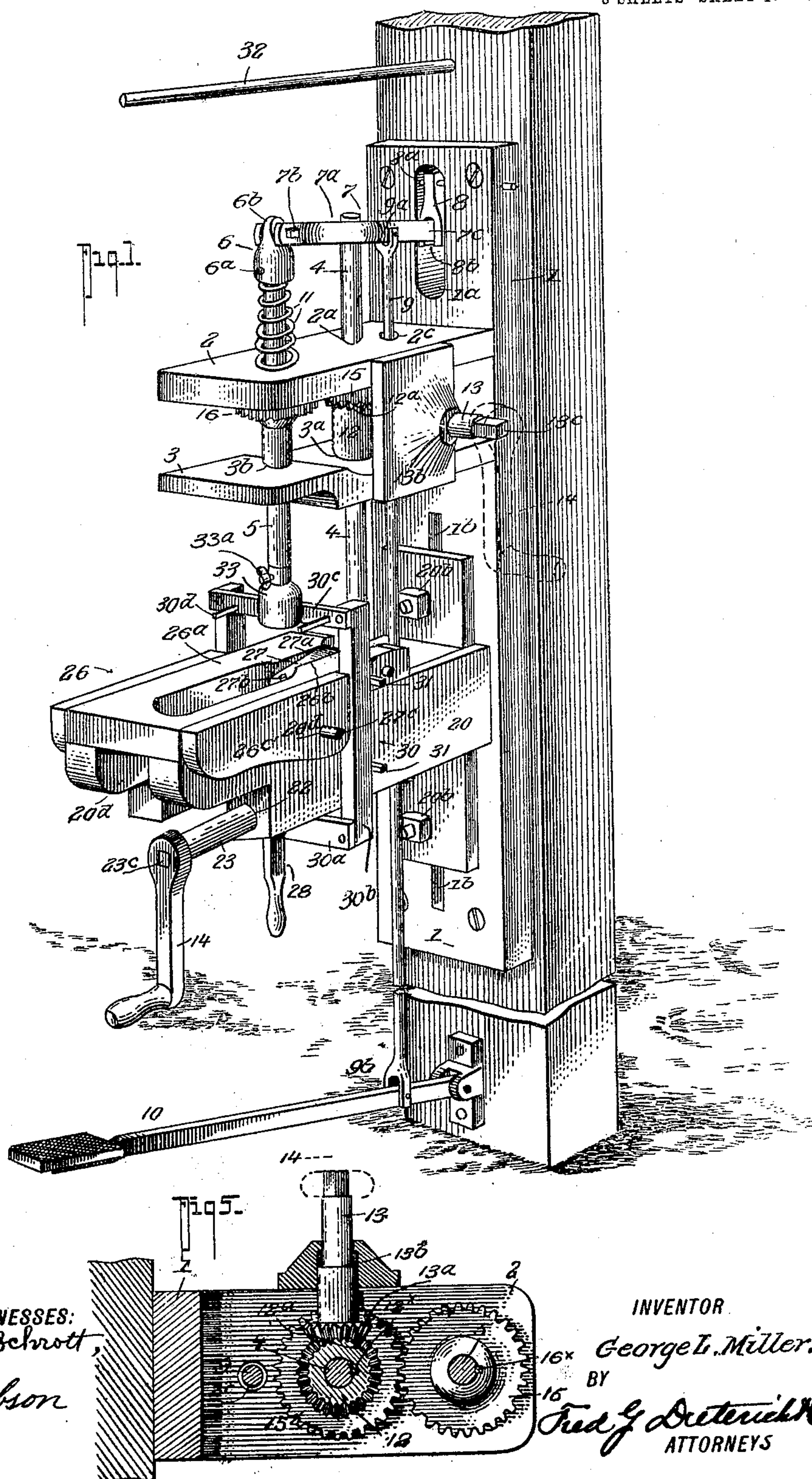
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PATENTED DEC. 19, 1905.

G. L. MILLER.  
TIRE BOLTING, BORING, AND DRILLING MACHINE.

APPLICATION FILED MAY 18, 1905.

3 SHEETS—SHEET 1.



WITNESSES:  
John W. Schrott,  
Chas. Gibson

INVENTOR

George L. Miller.

BY

Fred J. Dietrich & Co.  
ATTORNEYS



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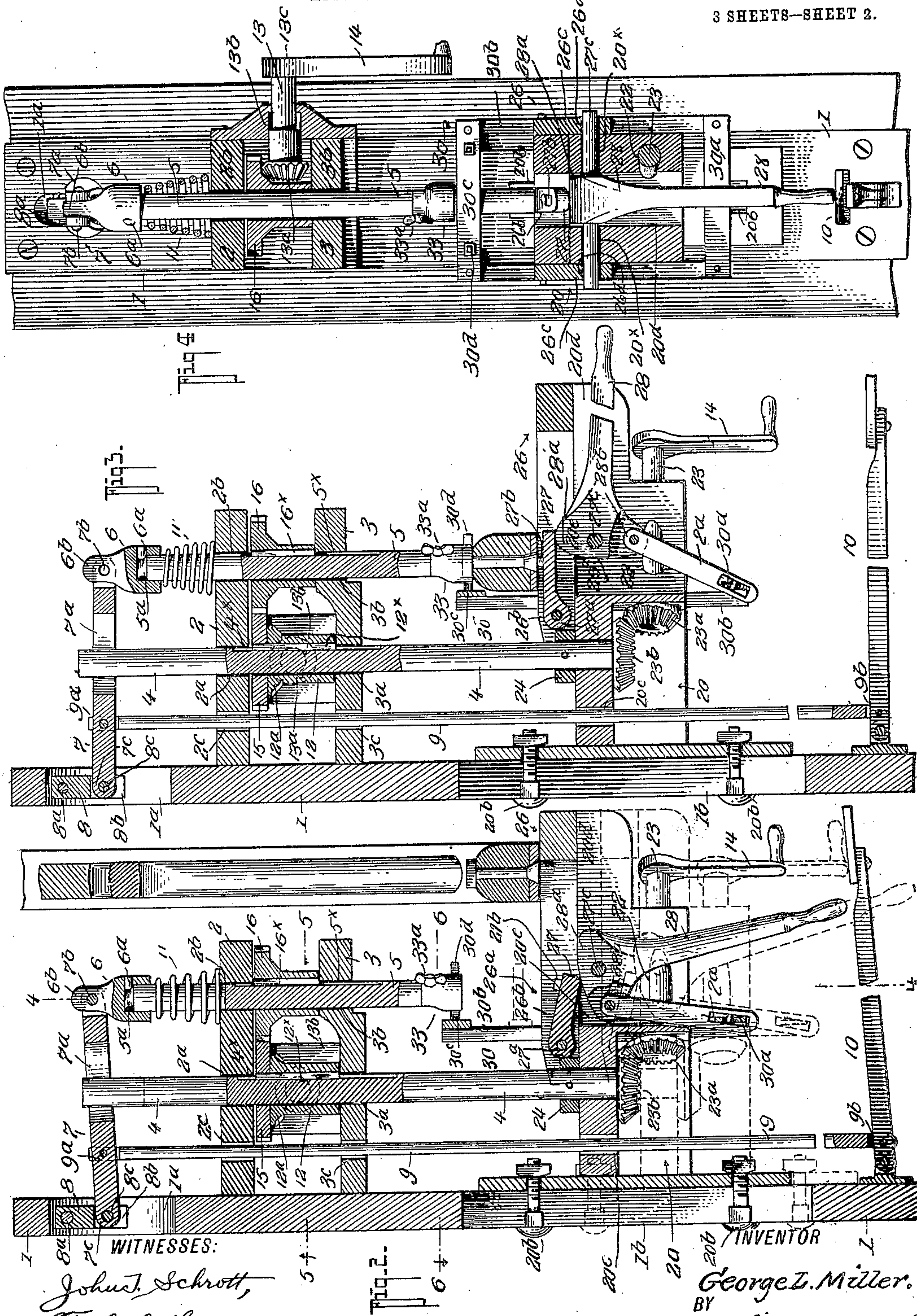
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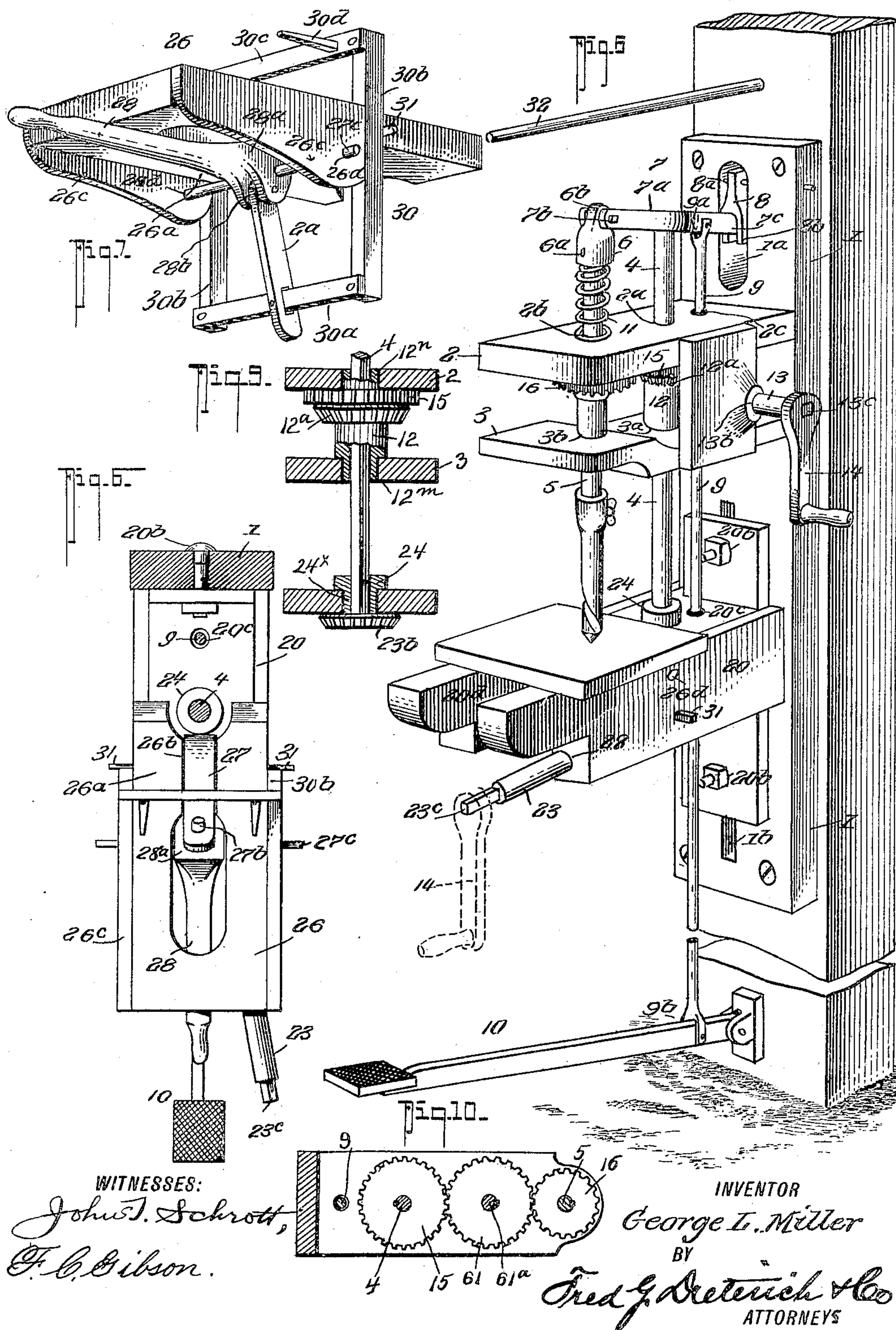
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3 SHEETS—SHEET 3.





# UNITED STATES PATENT OFFICE.

GEORGE L. MILLER, OF SOCIALVILLE, OHIO.

## TIRE BOLTING, BORING, AND DRILLING MACHINE.

No. 807,481.

Specification of Letters Patent.

Patented Dec. 19, 1905.

Application filed May 18, 1905. Serial No. 260,989.

*To all whom it may concern:*

Be it known that I, GEORGE L. MILLER, residing at Socialville, in the county of Warren and State of Ohio, have invented certain new and useful Improvements in Tire Bolting, Boring, and Drilling Machines, of which the following is a specification.

My invention relates to certain new and useful improvements in machines for turning nuts on and off tire-bolts, boring the felly, and means for drilling the vehicle-rim or other objects; and the invention primarily has for its object to provide a machine of this character of a very simple and effective construction which can be easily operated and which will readily and effectively serve its intended purposes.

Generically my invention includes a main shaft, a pair of drive-pinions thereon, a pair of drive-shafts geared with said main shaft, a drill-carrying shaft geared with said main shaft, means for moving the drill-carrying shaft longitudinally on its axis toward or from the objects being worked upon, and an anvil member vertically adjustably held on a supporting-base and arranged so as to be moved toward or from the drill-shaft to allow for work of different thicknesses.

The invention also includes a supplemental anvil member having means coöperating therewith for holding the wheel thereon and having means for engaging the bolt to prevent its turning while the nut is being screwed on or unscrewed, such supplemental anvil member being detachably secured to the main anvil member, so that it can be bodily removed therefrom, together with the wheel-holding and bolt-holding devices.

With other objects in view than have been heretofore enumerated the invention comprises certain novel construction, arrangement, and combination of parts, all of which will be first described in detail and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my invention. Fig. 2 is a vertical longitudinal section thereof, showing the parts adjusted ready to receive a wheel and showing the anvil in dotted lines to receive larger work. Fig. 3 is a similar view showing the parts adjusted with the wheel in position, the wheel-holding clamp engaging the wheel-rim and the bolt-holder engaging

the bolt. Fig. 4 is a cross-section on the line 4 4 of Fig. 2. Fig. 5 is a horizontal section on the line 5 5 of Fig. 2. Fig. 6 is a similar view on the line 6 6 of Fig. 2. Fig. 7 is a detail perspective view of the supplemental anvil member looking at it from the under side. Fig. 8 is a perspective view of my machine with the supplemental anvil member removed and showing how the same may be used for drilling or boring ordinary metal plates. Figs. 9 and 10 are modified views hereinafter specifically referred to.

Referring now to the accompanying drawings, in which like numerals of reference indicate like parts in all of the figures, 1 represents a base which is adapted to be secured to a post or other suitable support and which is provided with a pair of longitudinal extensions 2 and 3, spaced a suitable distance apart. The extensions 2 and 3 are each provided with a pair of apertures 2<sup>a</sup> 2<sup>b</sup> and 3<sup>a</sup> 3<sup>b</sup>, respectively, the corresponding apertures 2<sup>a</sup> 3<sup>a</sup> and 2<sup>b</sup> 3<sup>b</sup>, respectively, alining with each other. The main shaft 4 passes through the apertures 2<sup>a</sup> and 3<sup>a</sup>, while the drill-shaft 5 passes through the apertures 2<sup>b</sup> and 3<sup>b</sup> and the shafts 4 and 5 extend parallelly to each other.

The upper end of the drill-shaft 5 is provided with an annular groove 5<sup>a</sup> to receive a key-pin 6<sup>a</sup> of a cap-bearing 6, which fits on the shaft end and which has an apertured lug 6<sup>b</sup> to be straddled by arms 7<sup>a</sup> 7<sup>a</sup> of the bifurcated lever 7, a bolt 7<sup>b</sup> serving to pivotally connect the lever 7 to the lug 6<sup>b</sup>. The lever 7 is so arranged as to permit the main shaft 4 passing up between its bifurcated arms 7<sup>a</sup> 7<sup>a</sup> when desired.

1<sup>a</sup> designates a slot in the base 1, in which a short link 8 is fulcrumed, as at 8<sup>a</sup>. The link 8 has a bifurcated end 8<sup>b</sup> to receive an end 7<sup>c</sup> of the lever 7, to which it is pivotally connected by a bolt or pin 8<sup>c</sup>, as clearly shown in Fig. 2 of the drawings.

9 designates a rod pivotally connected at one end 9<sup>a</sup> to the lever 7 and passing downwardly through apertures 2<sup>c</sup> 3<sup>c</sup> in the extensions 2 and 3, respectively, and through an aperture 20<sup>c</sup> on the anvil 20, hereinafter again referred to. The rod 9 at its lower end 9<sup>b</sup> joins with a foot-treadle 10, by means of which the rod 9 can be operated to pull down and move the drill-shaft 5 toward the anvil, a coil-spring 11 on the drill-shaft 5 between the extension 3 and



the bearing 6 serving to normally hold the drill-shaft 5 up with the tool 33 above and out of engagement with the work.

Mounted on the main shaft 4 between the extensions 2 and 3 is a sleeve 12, which carries a beveled gear 12<sup>a</sup> to mesh with the beveled pinion 13<sup>a</sup> on the upper drive-shaft 13, which is mounted in a bearing 13<sup>b</sup>, connected with the extensions 2 and 3, and which projects to one side of the machine and has a squared end 13<sup>c</sup> to receive a crank or other power-applying device 14. The main shaft 4 has a groove 4<sup>x</sup> to receive a key 12<sup>x</sup> of the sleeve 12, so as to connect the sleeve 12 and the shaft 4 to turn together, but still allow longitudinal movement of the shaft 4 through the sleeve 12. 15 designates a gear on the shaft 4 between the extension 2 and the sleeve 12, which gear also has a key for entering the groove 4<sup>x</sup> and which gear 15 also meshes with a gear 16 on the drill-shaft 5. The gear 16 has a key 16<sup>x</sup> to enter a groove 5<sup>x</sup> of the shaft 5, whereby the shaft 5 and the gear 16 will rotate together and still allow of longitudinal movement of the shaft 5 through the gear 16.

20 designates the main anvil, which has a securing-base adjustably mounted on base 1 by bolts 20<sup>b</sup> 20<sup>b</sup>, which pass through a slot 1<sup>b</sup> in the said base 1. The anvil 20 has a slotted portion 20<sup>d</sup>, forming a bifurcated end 20<sup>e</sup> 20<sup>e</sup>.

22 designates a bearing portion in the anvil 20 to receive the forwardly-extending drive-shaft 23, which carries a drive-pinion 23<sup>a</sup>, that meshes with a drive-pinion 23<sup>b</sup> on the main shaft 4, and which has a squared end 23<sup>c</sup> to receive a crank 14 or other power-applying drive mechanism.

24 represents a collar on the shaft 4 adjacent the anvil 20 to hold the shaft 4 from longitudinal movement with respect to the anvil 20, so that when the anvil 20 is adjusted up or down the shaft 4 and the anvil 20 will move together.

26 designates a supplemental anvil which comprises a body portion 26<sup>a</sup>, having a longitudinal slot 26<sup>b</sup>, in which the bolt-holding member 27 is pivotally secured, as at 27<sup>a</sup>. The bolt-holding member 27 has a bolt-engaging stud 27<sup>b</sup> at the free end.

26<sup>c</sup> 26<sup>c</sup> designate the sides of the anvil 26, which straddle the main anvil 20 and which have apertures 26<sup>d</sup> 26<sup>d</sup> to receive the securing pin or bolt 27<sup>c</sup>, which also passes through apertures 20<sup>x</sup> in the bifurcated end of the main anvil 20 to secure the supplemental anvil 26 to the main anvil 20.

Mounted on the bolt 27<sup>c</sup> between the bifurcated end of the anvil 20 in the slot 20<sup>d</sup> is a cam-lever 28, whose cam portion 28<sup>a</sup> is adapted to engage the bolt-holder 27 to force it against the bolt-head. The cam-lever 28 also has a bifurcated portion 28<sup>b</sup> to receive a link 29, which connects with the lower cross-bar 30<sup>a</sup> of a rectangular frame 30, whose side bars 30<sup>b</sup> 30<sup>b</sup> straddle the anvils 20 and 26 and pro-

ject up above the top of the anvil 26, the top bar 30<sup>c</sup> of the frame 30 being provided with wheel-engaging fingers 30<sup>d</sup> 30<sup>d</sup> to hold the wheel down on the anvil when the lever 28 is manipulated. The bars 30<sup>b</sup> 30<sup>b</sup> extend between the ends of the sides 26<sup>c</sup> 26<sup>c</sup> and studs 31 31 of the anvil 26.

32 designates a rod secured to the support in a position above the machine to receive the wheel-hub.

So far as described, the manner in which my invention operates can best be explained as follows: If it is desired to use my machine as a bolting-machine, I secure a wrench member 33 to the drill-shaft 5 by a set-screw 33<sup>a</sup>, as shown. The wheel is then put in place on the rod 32, as shown in Fig. 1, in an upright position to rest on the anvil 26, the wheel being turned until the proper bolt is in position under the drill-shaft and above the anvil. The operator then moves the wheel with a bolt directly under the drill-shaft and depresses the treadle, which causes the wrench 33 to engage the nut. The crank 14 is secured to the machine drive-shaft 23, which when turned causes the shaft 4 to turn the drill-shaft 5, and thereby turn the wrench 33 to enable the nut to be screwed on or off, as the case may be. Should a bolt in the wheel-rim turn during the foregoing operation, it is only necessary to raise the lever 28, when the wheel-rim will be firmly grasped by the fingers 30<sup>d</sup> and held tightly against the anvil, while the bolt will be engaged by the stud 27<sup>b</sup> of the bolt-holder 27 and held from turning. After the nut has been removed the wheel is drawn forward on the anvil 26, where it will be in the position to permit driving the bolt out of the wheel.

From practical experience I have found that in old wheels the bolts become very tight, in some cases requiring the services of a helper to hold the wheel while the bolts are being driven out. With my machine no helper is required, as the wheel rests on a solid base, thus saving time and expense.

The adjustability of the anvil permits wheels of different sizes to be used on one machine, the anvil being adjusted up or down to take the particular size rim that is being operated upon.

The double drive-shaft mechanism employed by me is essential, as the two drive-shafts greatly enlarge the scope of work the machine is able to do, as either shaft can be used by the operator in his work, depending upon the position in which he is standing while working the machine.

When my invention is used for any other purpose than tire-bolting, the anvil 26 is removed from the machine, leaving the anvil 20 in position to receive any material to be operated upon for general drilling or boring, and when my machine is used as a drilling and boring machine I remove the wrench 33



and place a drill in its place. Again, when my machine is used as a drilling and boring machine the crank 14 is applied to the upper drive-shaft instead of to the machine, if desired.

By the use of my invention newly-painted wheels can have their burs or nuts removed or applied without the danger of scratching the paint on the wheel, as the work is always in plain view at all times and no part of the woodwork of the wheels comes in contact with the machine.

In Fig. 9 I have shown how a square shaft 4 or 5 may be used, and when the shaft 4 is made square, as shown in Fig. 9, the gear 15 is provided with a hub 12<sup>n</sup>, which enters the bearing-aperture in the member 2, and the sleeve 12 is provided with a hub 12<sup>m</sup> to enter the bearing-aperture in the member 3. In this form the stop 24 is also provided with a hub 24<sup>x</sup>, as shown.

In Fig. 10 I have shown a further modified form of my invention in which an intermediate gear 61, on a stud-shaft 61<sup>a</sup> is provided to permit the shafts 4 and 5 being spaced a greater distance apart than in the forms shown in Figs. 1, 2, and 3 in the drawings.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, operation, and many advantages of my invention will be readily understood by those skilled in the art to which it appertains.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine of the class described, a base, a main anvil adjustably mounted thereon, said anvil having a bifurcated portion, a supplemental anvil mounted on said main anvil over said bifurcated portion and having a portion for straddling said main anvil, a cam-lever fulcrumed on the bifurcated portion of

the main anvil, said supplemental anvil having a slot, a bolt-holder fulcrumed in said supplemental-anvil slot and operatable by said cam-lever, a wheel-clamp straddling said anvil, means for connecting said wheel-clamp with said cam-lever to operate the clamp and a tool carrying and operating mechanism mounted on the base above the anvil, substantially as shown and described.

2. In an apparatus of the class described, a base, a pair of longitudinal extensions secured to said base, a main shaft passing through a pair of apertures in said horizontal extensions, a tool-holding shaft passing through apertures in said horizontal extensions, gear connections between said main and tool-holding shafts, said tool-holding shaft having a cap-bearing at the upper end, a bifurcated lever fulcrumed to said cap-bearing, said base having a slotted portion, a link fulcrumed in said slotted portion of the base, said bifurcated lever fulcrumed to said link, a spring on said tool-holding shaft for normally moving the same upwardly, means for moving the tool-holding shaft downwardly, a laterally-extending drive-shaft mounted in a bearing secured to said horizontal extensions, gear connections between said drive-shaft and said main shaft, and an anvil adjustably secured to said base below said horizontal extensions, said main shaft being mounted on said anvil to move therewith, a drive-shaft mounted in bearings in said anvil, gear connections between said anvil drive-shaft and said main shaft, a wheel-clamp and a bolt-holder mounted on said anvil, and means mounted on the anvil for operating said wheel-clamp and said bolt-holder, substantially as shown and described.

GEORGE L. MILLER.

Witnesses:

J. LEE THOMPSON,  
JOHN W. BUCK.