A. COLLET.

MACHINE FOR GROOVING AND BORING RAILWAY TIES.

APPLICATION FILED APR. 24, 1915.

1,210,908.

Patented Jan. 2, 1917.

4 SHEETS—SHEET 1.

Fig. 1.

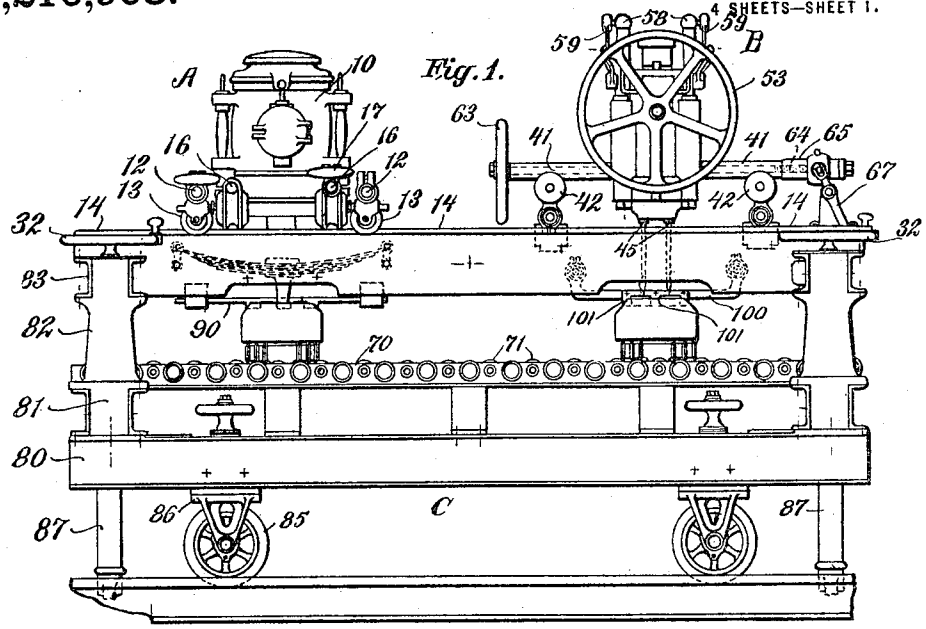
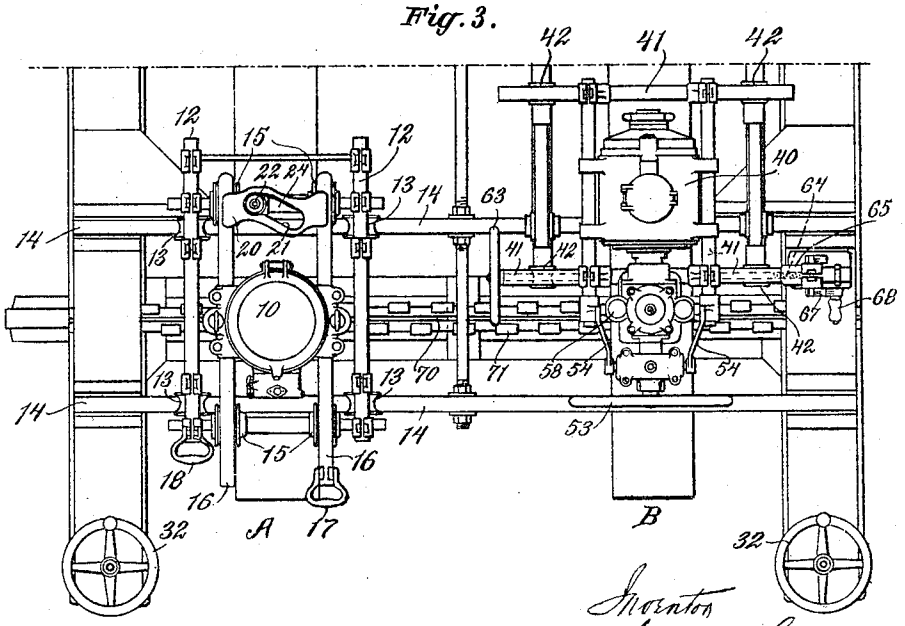


Fig. 3.



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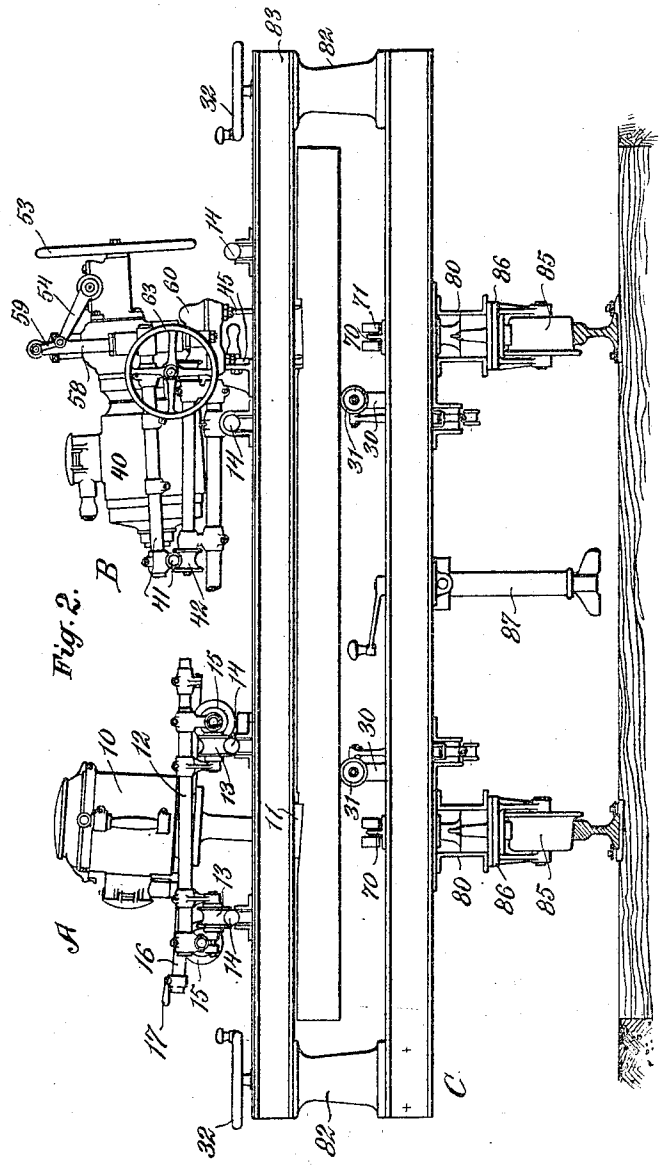


Fig. 2.

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4 SHEETS—SHEET 3.

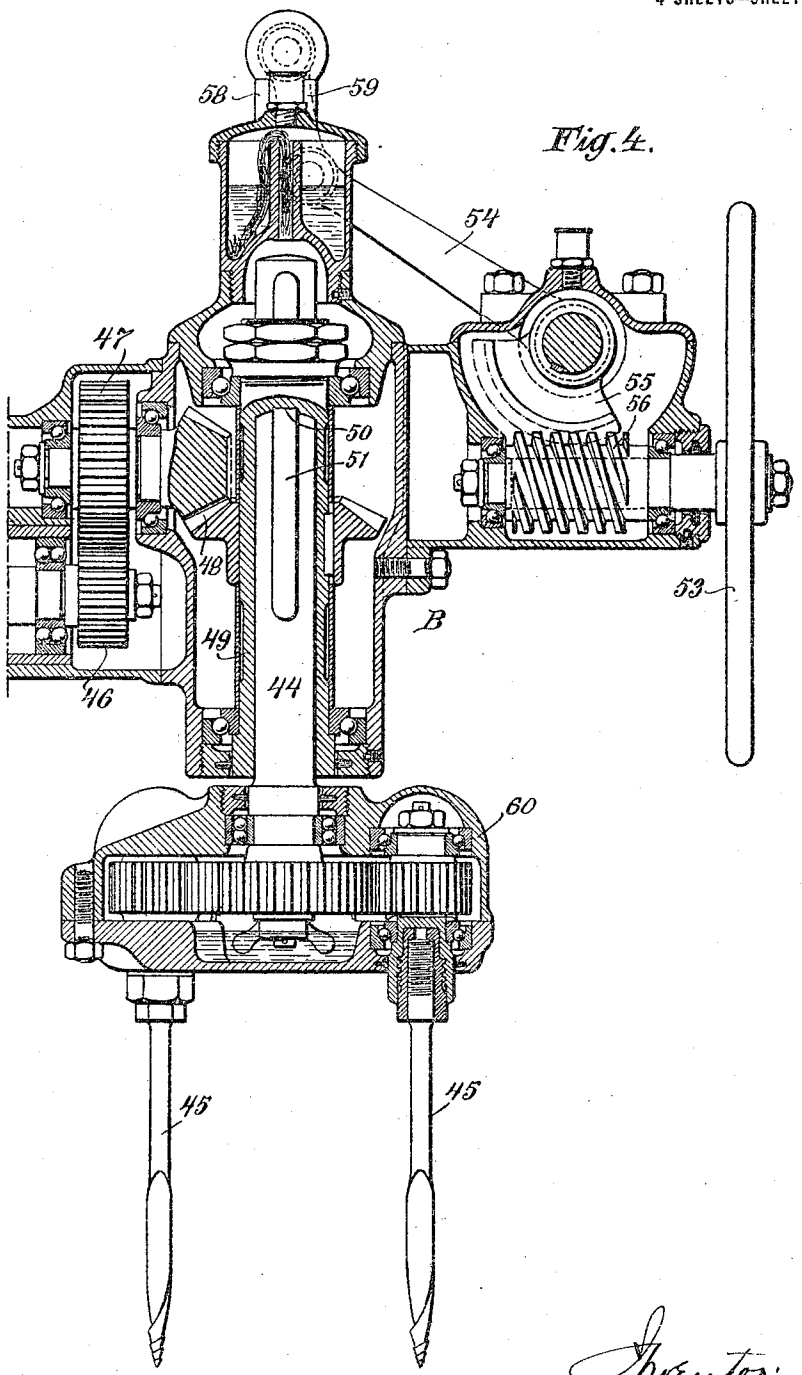


Fig. 4.

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4 SHEETS—SHEET 4.

Fig. 5.

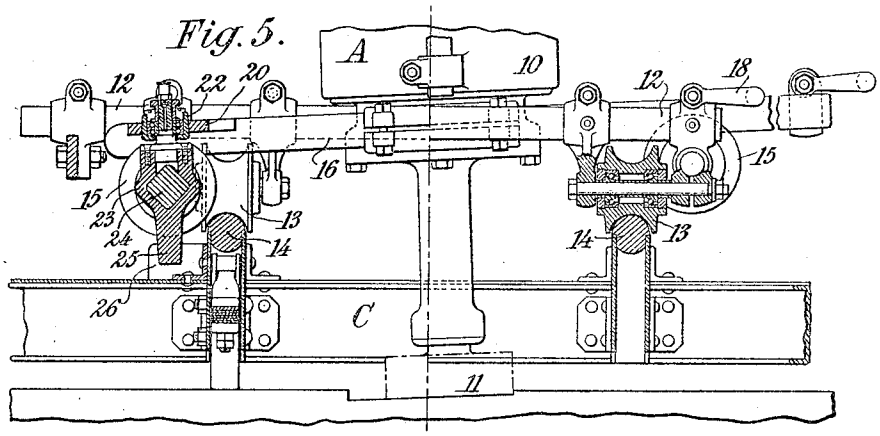


Fig. 6.

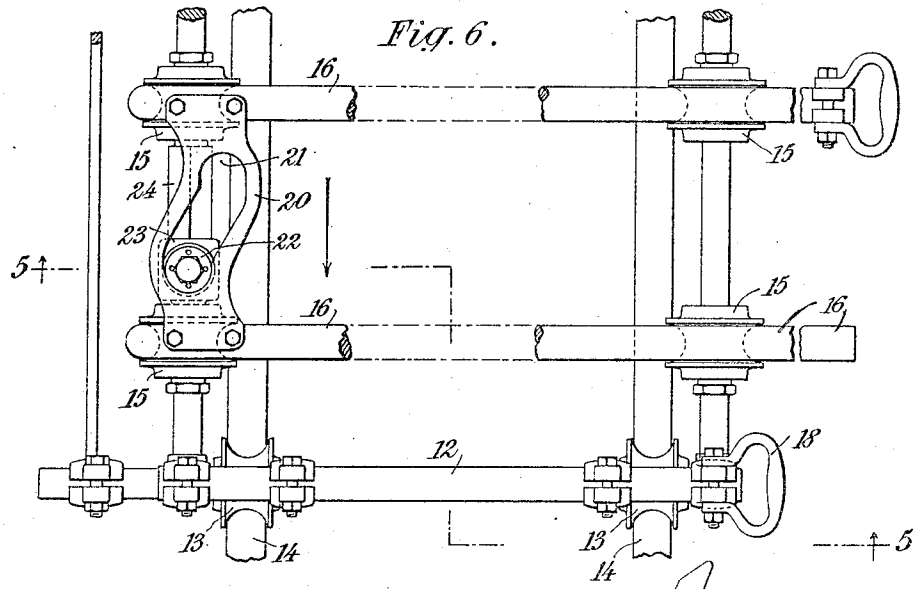
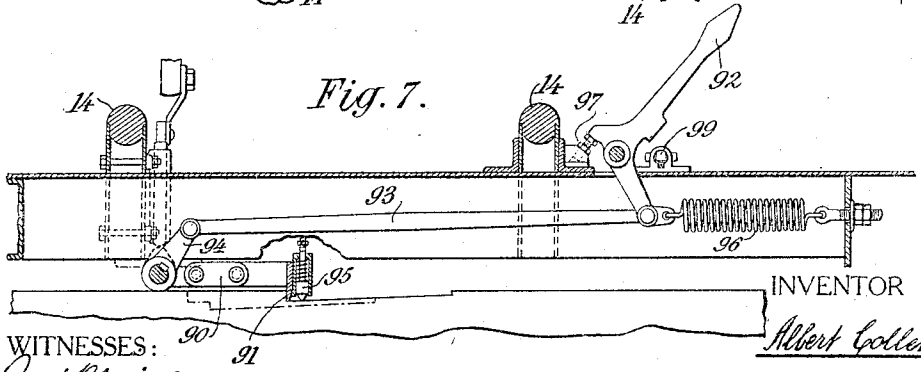


Fig. 7.



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UNITED STATES PATENT OFFICE.

ALBERT COLLET, OF PARIS, FRANCE, ASSIGNOR TO SOCIÉTÉ MAURICE ET PIERRE COLLET ET CIE., OF PARIS, FRANCE.

MACHINE FOR GROOVING AND BORING RAILWAY-TIES.

1,210,908. Specification of Letters Patent. Patented Jan. 2, 1917.

Application filed April 24, 1915. Serial No. 23,788.

To all whom it may concern:

Be it known that I, ALBERT COLLET, of Paris, France, have invented certain new and useful Improvements in Machines for Grooving and Boring Railway-Ties, of which the following is a full and complete specification.

This invention relates to machines for grooving and boring railway ties, and aims to provide improvements therein.

The present construction is especially applicable to portable machines adapted to be used along the track and to be transported upon the track.

The invention provides an improved combination and parts for expeditiously and accurately carrying out the operations of grooving and boring the ties.

Other features of the invention will be hereinafter set forth.

The invention will be described in greater detail in connection with the accompanying drawings, wherein:—

Figure 1 is a longitudinal elevation of the machine. Fig. 2 is an end view thereof. Fig. 3 is a plan view of the machine. Fig. 4 is a detail vertical sectional view of one of the borers. Fig. 5 is a detail view, partly in elevation and partly in section of the groover and mechanism automatically governing some of its operations. Fig. 6 is a plan view of the parts illustrated in Fig. 5, the motor and cutter, however, being omitted. Fig. 7 is a detail view of gage mechanism which is used in putting the ties in place in the machine.

In said drawings, the letter A designates the grooving mechanism and B the boring mechanism.

The grooving mechanism comprises a motor 10 and a direct driven rotary cutter 11. The motor and cutter are mounted upon a carriage 12 having grooved wheels 13—13, on which the carriage is adapted to roll on rails 14—14. The rails 14—14 are preferably mounted longitudinally upon a truck C. There are preferably two grooving mechanisms A, one each side of the truck, so as to groove the tie on each side of its center at once. The carriages 12 are, however, independently movable. There are likewise preferably two boring mechanisms B. The carriage 12 is preferably provided with rollers 15—15 upon which slide a pair of bars 16—16 which carry the motor 10. The bars 16—16 are preferably mounted at a slight angle, so that the cut made by the cutter 11 will be at a slight angle to the perpendicular.

In grooving a tie the carriage 12 is moved by hand on the rails 14 transversely of the tie. The carriage is preferably provided with a handle 18, for convenience in moving the same.

Where it is desired to cut a groove in the tie of greater width than the width of the cutter, the cutter is passed back and forth across the tie, being displaced lengthwise of the tie between cuts by moving the bars 16—16 carrying the motor and cutter on the rollers 15. The movement of the cutter for cutting a groove of greater width than the width of the cutter is preferably rendered automatic. For this purpose (see particularly Figs. 5 and 6), the bars 16—16 have attached thereto a plate 20 having a cam groove 21 therein, the groove having a "throw" corresponding to the desired width of the cut. Within the groove is arranged a wheel 22 carried upon a stud on a collar 23 slidable upon a squared rod 24 forming a part of the carriage 12. The collar 23 has a projection 25 (Fig. 5) which is adapted to strike against a stop 26 fixed upon the truck C, when the carriage 12 has been moved along the rails 14—14 sufficiently far to carry the cutter across the tie. The striking of the projection 25 against the stop 26 causes the collar to stop, and the continued movement of the carriage 12 in the direction of the arrow, (Fig. 6) causes the wheel 22 to bear against the sides of the cam groove 21 in the plate 20, and move the plate and bars 16—16 to the left in said figure. The cutter is thereby displaced laterally, and upon pushing the carriage 12 on the rails 14—14 in the direction opposite to the arrow in Fig. 6, the cutter will make a cut across the tie along a line displaced laterally with relation to the first cut.

The ties are preferably lifted and held in position beneath the cutters by arms 30 having rollers 31 thereon. The arms 30 may be raised and lowered by the handwheels 32.

The boring mechanism comprises a motor 40, and is carried upon a frame 41 slidable upon rollers 42 suitably mounted upon the truck C. The motor 40 drives a spindle

44 (Fig. 4) actuating a plurality of boring tools 45, the spindle 44 being preferably driven through the intermediary of reducing gears 46—47, a pair of beveled gears 48, and a sleeve 49, the spindle 44 and sleeve 49 being connected by a slot and key connection 50—51.

The boring tools 45 are advanced toward and from the tie by means of a handwheel 53 actuating an arm 54 connected to the wheel 53 by a sector and worm 55—56. The arm 54 is connected to a sliding rod 58 through a link 59, the sliding rod 58 having connected to its lower end the head 60 which carries the boring tools 45. The spindle 44 slides longitudinally of the sleeve 49 when the head 60 is moved toward and from the work.

The carriage 41 of the boring mechanism is preferably mounted at an angle, so that the boring tools work at a slight angle to the vertical.

The carriage 41 is moved crosswise of the tie, in order to properly position the borers, preferably by a hand wheel 63 actuating a screwthreaded rod 64 engaging a threaded socket piece 65. The socket piece 65 is preferably carried by a lever 67 having a handle 68. By throwing the lever 67 the carriage 41 may be quickly and definitely moved to bring the boring tools to another boring position. Hence it is simply necessary to throw the lever from one position to its other to bore sets of holes a uniform distance apart. The borers may be set to a different initial boring position by adjusting the hand wheel 63, after which the lever 67 may be operated to throw the borer to positions where the sets of holes are uniformly spaced, as previously. This is also of importance where the holes to be bored are closer together than it is possible to arrange the boring tools.

A slideway 70 is preferably provided on the carriage for sliding the ties from a position beneath the grooving mechanism to a position beneath the boring mechanism. The slideway is preferably provided with antifriction rollers 71.

The truck C is conveniently formed of channel bars 80 having other channel bars 81 thereon, pedestals 82, and other channel bars 83 upon the pedestals. Wheels 85 are provided. The wheels 85 are preferably carried in brackets 86 adapted to be turned at right angles. This construction is of importance in placing the truck on and off the track. Jacks 87 are provided for lifting the ends of the truck. To remove the truck from the track, for instance, one end of the truck is jacked up by a jack 87; the wheels at the jacked end are turned at right angles above a rail placed crosswise of the track. The other end of the truck is then jacked up, and the wheels at that end turned at right angles above a rail crosswise of the track, as before. The truck can then be rolled to one side of the track.

Means are preferably provided for setting the ties quickly and properly in position beneath the grooving and boring mechanisms. Beneath the grooving mechanism there is arranged an arm 90 having a tooth or finger 91 thereon adapted to abut against the wall of a recess or cut in the face of the tie, as for instance, a groove which has been already cut in the tie, the purpose being to regroove the tie. The arm 90 is moved into and out of position toward and from the tie by means of a handlever 92, a connecting rod 93, and a crank arm 94. A spring 96 is connected to the connecting rod 93 and pulls on the latter in a direction to throw the arm 90 downward. A stop 97 limits the movement of the hand lever 92, and consequently the movement of the arm 90. A spring catch 99 engages said hand lever to hold it down, the arm 90 being thereby held raised. By drawing back the spring catch 99 and allowing the hand lever 92 to move freely, the spring 96 pulls upon the rod 93 and causes the arm 90 to move rapidly toward the tie. The pin 95 carried by the arm 90 strikes and indents the tie when the arm stops by reason of the tooth 91 coming into contact with the tie. The indentations produced by the pin 95 serve to assist in properly positioning the tie beneath the boring mechanism.

Beneath the boring mechanism there is arranged a gage bar 100 having teeth 101 thereon. By moving the tie longitudinally so as to bring the wall of the groove against the teeth 101, the longitudinal position of the tie is determined. By positioning the indentations produced by the pin 90 with relation to the teeth 101, the transverse location of the tie beneath the boring mechanism may be determined.

The inventive ideas may receive other mechanical embodiments than those herein specifically described and illustrated.

What I claim is:—

1. A portable machine for grooving and boring railway ties, comprising a motor with a direct connected grooving tool, a carriage upon which said motor and tool is mounted, said carriage being movable on rails crosswise of the tie, said motor and tool being slidable on said carriage longitudinally of the tie, and means for automatically moving said motor and tool longitudinally, said means comprising a camplate adapted to displace the motor and cutter, a finger or stud engaging said camplate, said stud being slidable with said carriage, and stops adapted to limit the movement of said stud at points where the cutter has been carried by the carriage to the completion of its crosswise cut, whereby

said cam-plate is moved by the stud, and the motor and cutter displaced longitudinally of the tie and adapted to make another cut in the tie when moved crosswise thereof again.

2. A portable machine for grooving and boring railway ties, comprising a motor with a direct connected grooving tool movable crosswise of the tie, a gage for positioning said tie beneath the tool, and means for moving said gage into and out of contact with the tie, said means, when the gage is in contact with the tie, locking the motor and tool against displacement.

3. A portable machine for grooving and boring railway ties, comprising a motor with a direct connected grooving tool movable crosswise of the tie, a gage for positioning said tie beneath the tool, and means for moving said gage into and out of contact with the tie, said means, when the gage is in contact with the tie, locking the motor and tool against displacement, said gage also comprising means for marking the tie to assist in positioning the tie beneath the boring mechanism.

4. A portable machine for grooving and boring railway ties, comprising a motor and a grooving tool, a motor and a boring tool, a gage beneath said grooving tool for positioning said tie, means for moving said gage into and out of contact with the tie, said gage comprising means for marking the tie, and a gage beneath the boring tool, said gage comprising a notched bar, the tie being positioned beneath the borer by positioning the marks on the tie relatively to the notches on the gage bar.

5. A portable machine for grooving and boring railway ties, comprising a motor and boring tool, a carriage on which said motor and tool is mounted, a lever for moving said carriage and boring tool for quick movement of the boring tool from one boring position to another, and a feed screw for adjustment of the position of said carriage, whereby the initial boring position of the carriage and boring tool may be adjusted.

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

ALBERT COLLET.

Witnesses:
D. W. C. POOLE, Jr.,
GABRIEL BELLIARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."