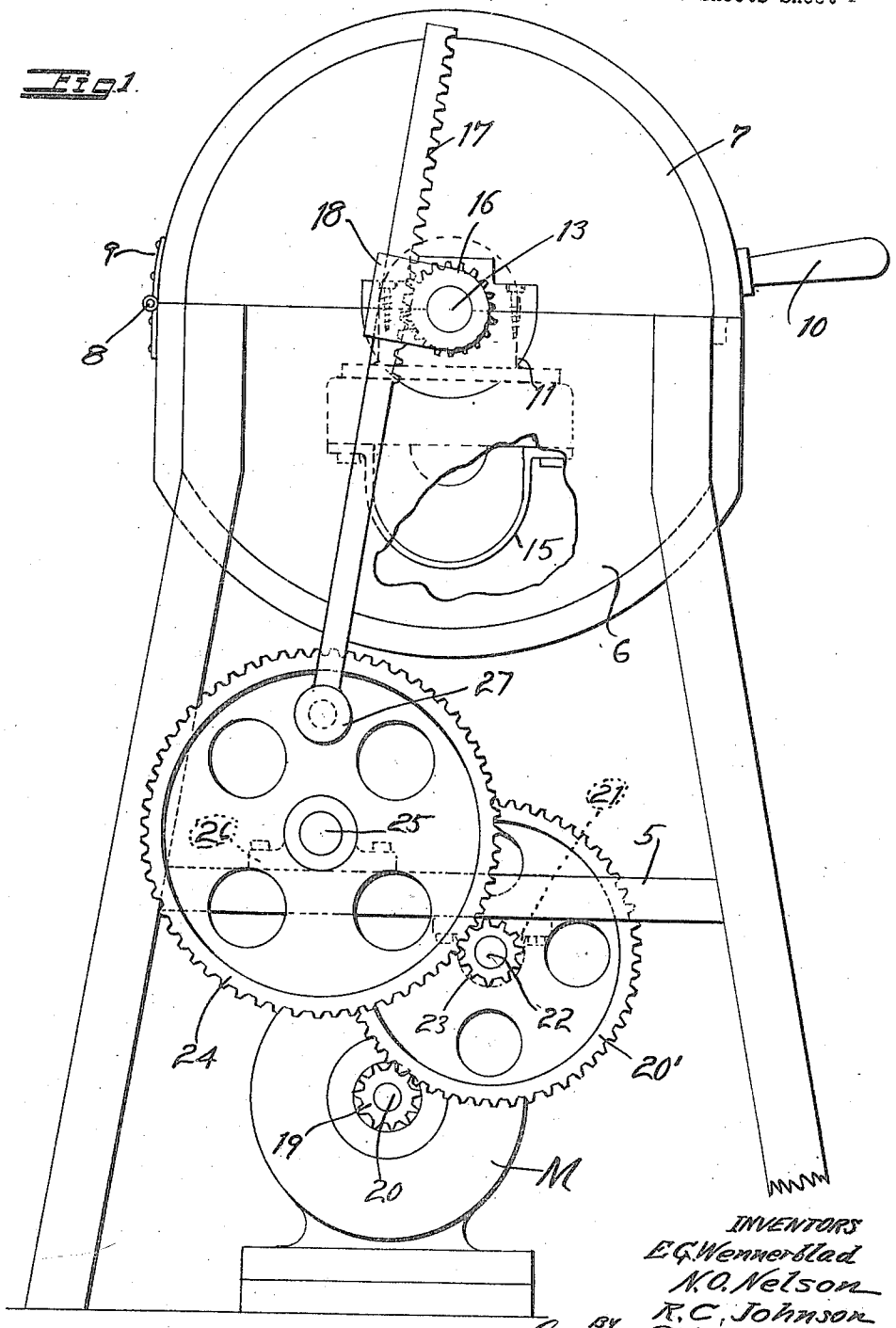
Oct. 14, 1924. 1,511,648

E. G. WENNERBLAD ET AL

PLATE ETCHING MACHINE

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Fig. 1.



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PLATE ETCHING MACHINE

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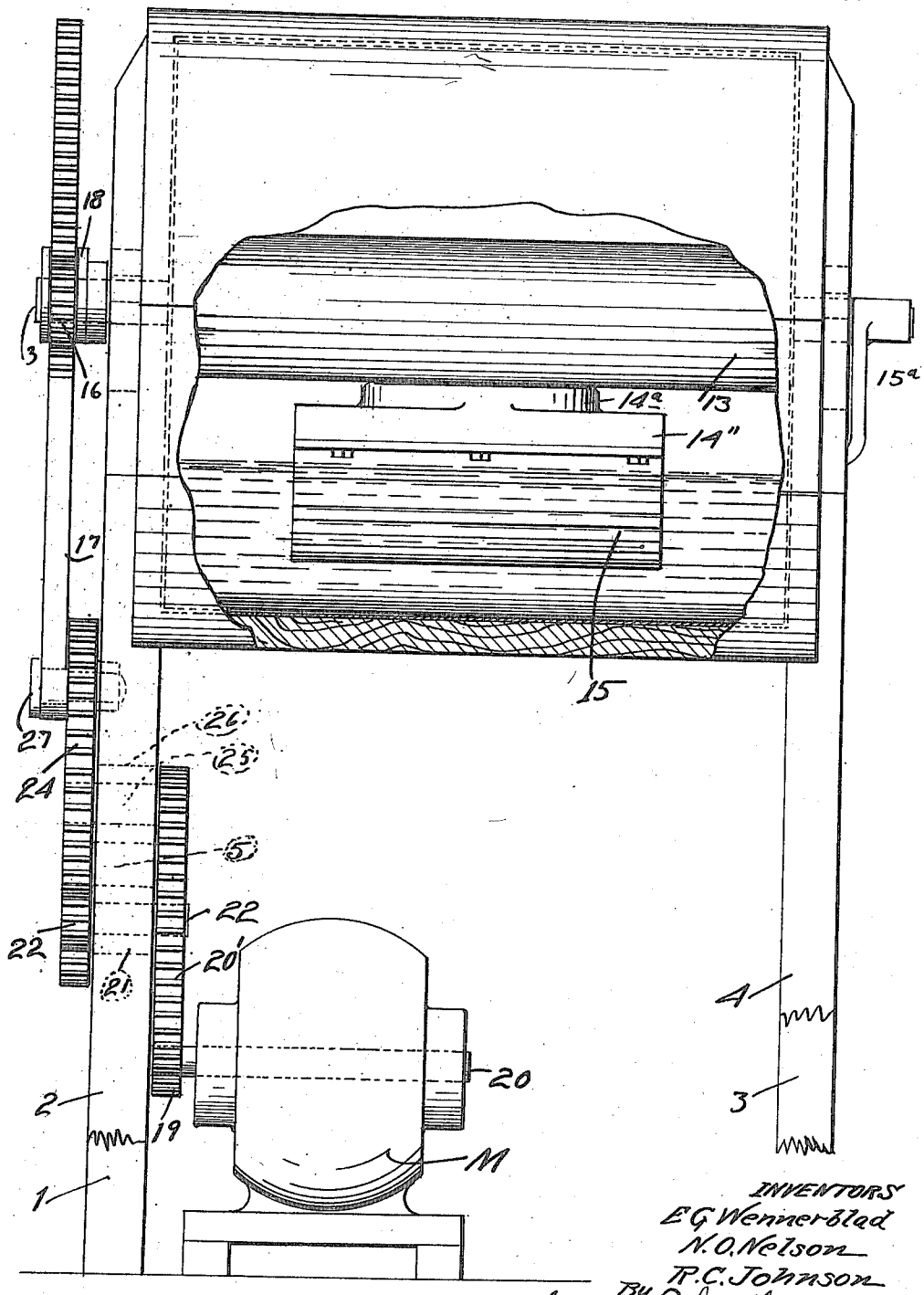


Fig 2.

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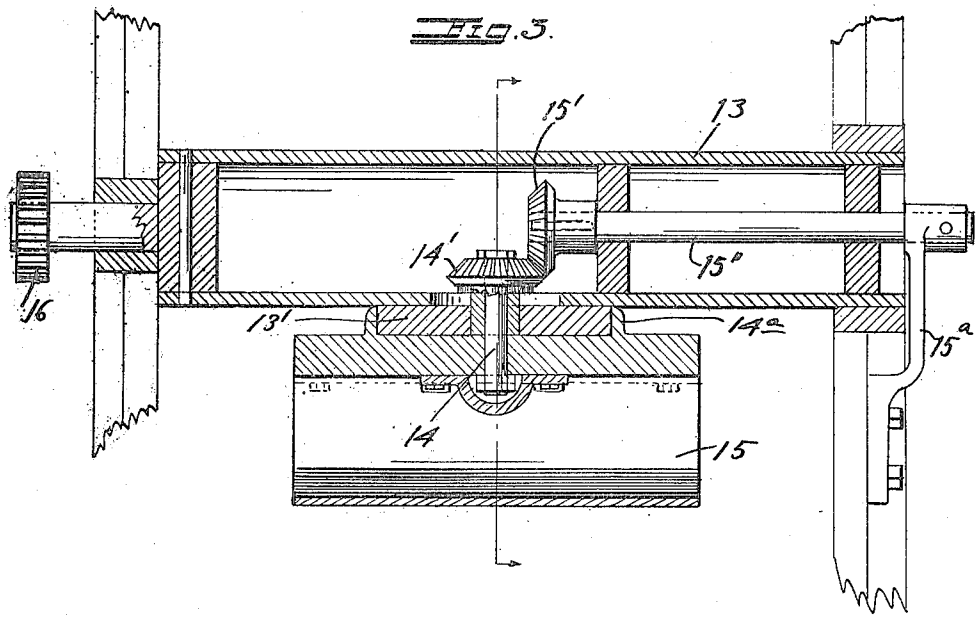
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PLATE ETCHING MACHINE

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Fig. 3.



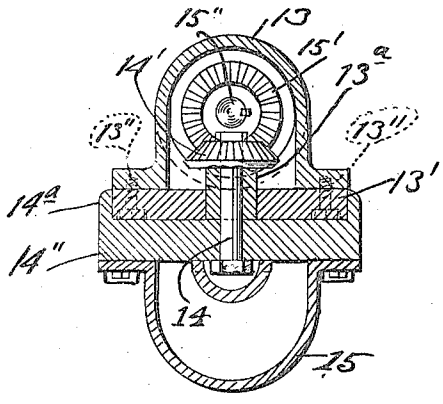


Fig 4

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UNITED STATES PATENT OFFICE.

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PLATE-ETCHING MACHINE.

Application filed January 3, 1923. Serial No. 610,523.

To all whom it may concern:

Be it known that we, EINAR G. WENNERBLAD, NELS OSCAR NELSON, and RAY C. JOHNSON, citizens of the United States, residing at San Francisco, in the county of San Francisco, State of California, have invented a new and useful Plate-Etching Machine, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a plate etching machine and its object is to produce a machine which will oscillate and rotate a plate through a body of liquid adapted to etch the desired characters on the plate, in a satisfactory manner.

It will be understood by those skilled in the art that in the production of etched plates, they are rapidly washed through a body of the etching fluid until the desired effect is produced.

In the present instance a support is provided for the plate which swings through and out of the etching bath repeatedly until the desired effect is attained, and a cover is provided for the etching bath to prevent the liquid from being splashed out of the tray containing it.

Other objects of the invention will appear as the description proceeds.

An embodiment of the invention is shown in the accompanying drawings in which the same reference numeral is applied to the same portion throughout, but we are aware that there may be modifications thereof.

Fig. 1 is an end elevation of the complete machine,

Fig. 2 is a front elevation of the complete machine, a portion being cut away in each instance to show the interior.

Fig. 3 is a longitudinal sectional view of the shaft which supports the plate holder,

Fig. 4 is a transverse sectional view of the plate supporting shaft.

The apparatus is provided with four supporting legs 1 to 4 inclusive, two of said legs having a cross-bar 5 connecting them for the support of the driving gears.

At their upper ends the legs are connected to a sort of semi-circular tub 6 which has a semi-cylindrical cover 7 hinged to the tub at 8 and 9. A handle 10 serves to raise the cover whenever necessary.

The hollow shaft 13 has a detachable plate 13′ secured thereto by cap screws 13″ to support a bearing 13^a through which a shaft 14 passes. The shaft 14 carries a bevel gear 14′ and a plate 14″ with a flange 14^a to prevent acid leakage into the hollow shaft. The plate 14″ carries a curved plate 15 to which the plates to be etched are in any convenient way secured.

The gear 14′ is in mesh with a fixed gear 15′ on a shaft 15″ secured to a bracket 15^a secured on the outside of the tub 6.

At one end the shaft 13 has a spur gear 16 which is in mesh with a rack bar 17, said rack bar sliding through a block 18 through which block the shaft 13 also rotates.

The apparatus is driven from the motor end which motor has a spur gear 19 on the drive shaft 20. The gear 19 is in mesh with the gear 20′, journaled in a bearing 21, secured to the underside of the bar 5 and the shaft 22 carrying said gear also carries a spur gear 23 in mesh with a large gear 24, secured to a shaft 25, journaled in a bearing 26, supported on the cross-bar 5.

The rack-bar 17 is connected to the gear 24 by means of the crank pin 27. The result of the foregoing construction is that the rack-bar 17 will be slowly raised and lowered and as it rises and falls, it will oscillate the plate support back and forth within the tub and at the same time will turn it on the shaft 14 thereby giving the plate the desired even washing effect in the etching solution. This washing will continue as long as the process may require.

It is to be noted that the solution makes it necessary to coat the inside of the tub and cover with asphaltum and to make many of the parts of the apparatus of non-corrodible material.

What we claim is as follows, but modifications may be made in carrying out the invention shown in the drawings and in the above particularly described form thereof, within the purview of the invention:

1. A plate etching machine, comprising a receptacle for the etching solution, a plate support suspended to be moved into the liquid in said receptacle, and means to oscillate said plate support into and out of the solution.

2. In an etching machine, the combination of a receptacle for the etching solution, a plate support revolubly supported to be moved into liquid in said receptacle, a cover

for the receptacle, and means to oscillate the plate support into and out of said solution.

3. The combination in an etching machine of a receptacle for the etching solution, a plate support revolubly carried by a hollow shaft extending over the said receptacle, a gear wheel on one end of the plate supporting shaft, a rack-bar in mesh therewith, and means to raise and lower the rack-bar to oscillate the plate support into and out of the etching solution.

4. The combination in an etching machine, of a receptacle for the etching solution, a plate support, and means to simultaneously rotate and oscillate the plate support into and out of the etching solution.

5. The combination of a receptacle for an etching solution, a plate support in the receptacle, a hollow shaft carrying said support, and means extending into said shaft to rotate the plate support as it is being oscillated.

In testimony whereof we have hereunto set our hands this — day of December, A. D. 1922.

NELS OSCAR NELSON.
EINAR G. WENNERBLAD.
RAY C. JOHNSON.