No. 721,445. PATENTED FEB. 24, 1903.

J. A. HOLMSTRÖM.

ETCHING APPARATUS.

APPLICATION FILED SEPT. 5, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 3.

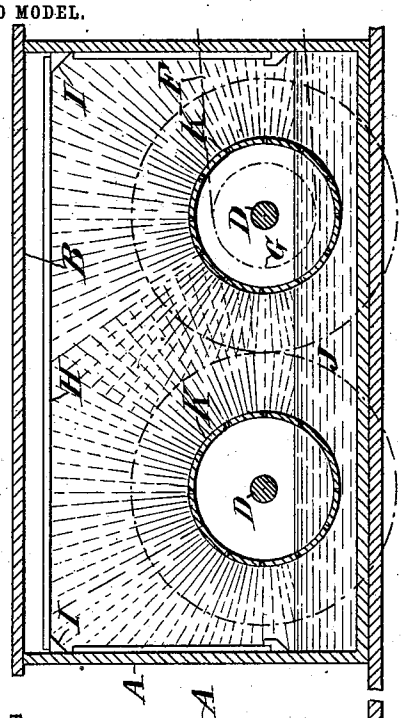


Fig. 4.

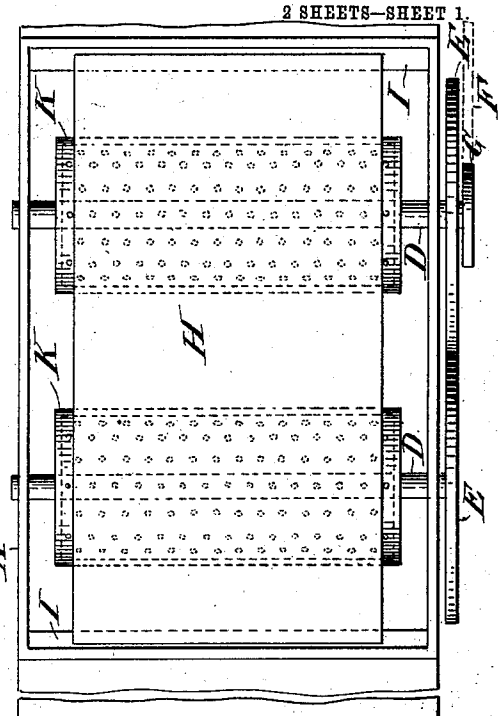


Fig. 1.

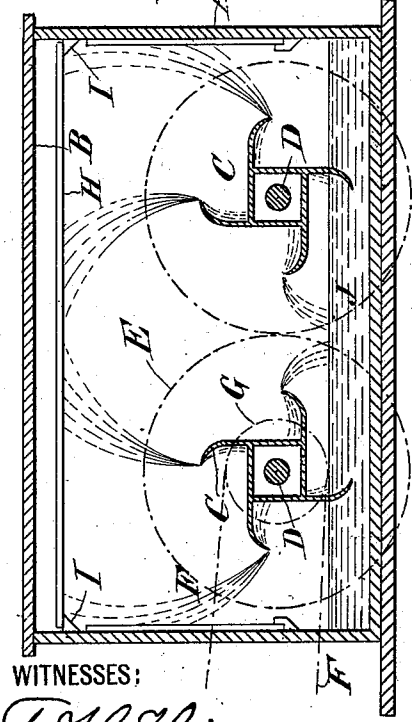
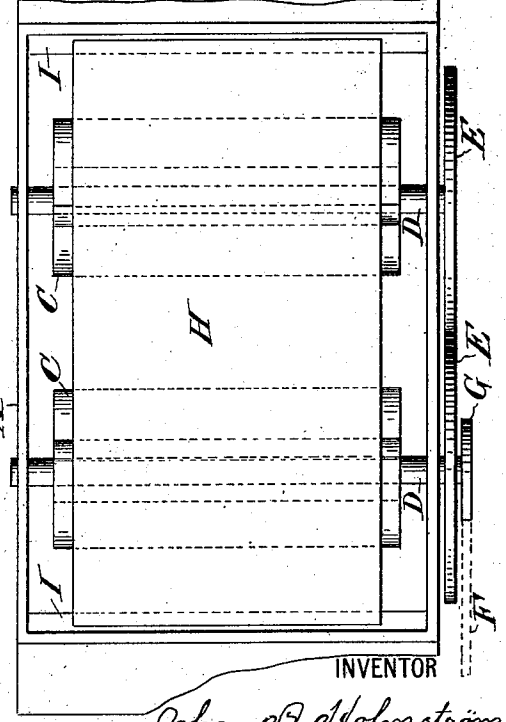


Fig. 2.



WITNESSES:

F. H. Hinman

B. A. Connell

INVENTOR

Johan A. Holmström

BY

Munn & Connell

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 721,445. PATENTED FEB. 24, 1903.

J. A. HOLMSTRÖM.

ETCHING APPARATUS.

APPLICATION FILED SEPT. 5, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 6.

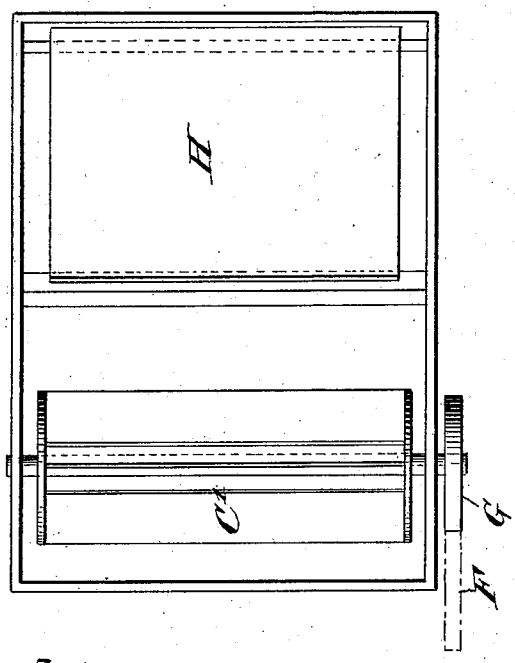
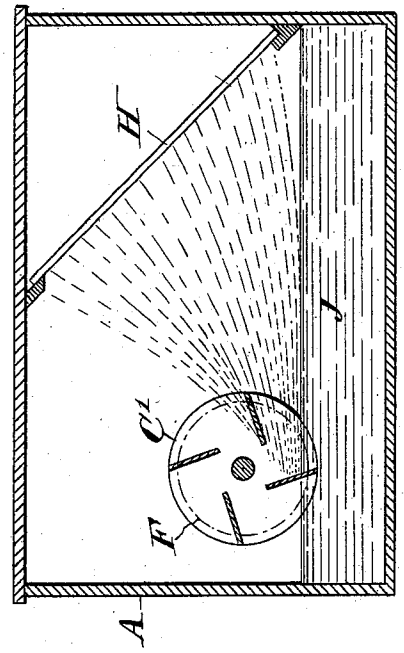


Fig. 5.



WITNESSES:

F. W. Ellmaw

H. A. Connell

INVENTOR

Johan A. Holmström

BY Henry Connett

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHAN AXEL HOLMSTRÖM, OF ROME, ITALY.

ETCHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 721,445, dated February 24, 1903.

Application filed September 5, 1902. Serial No. 122,221. (No model.)

To all whom it may concern:

Be it known that I, JOHAN AXEL HOLMSTRÖM, a subject of the King of Sweden and Norway, and a resident of Rome, in the Kingdom of Italy, have invented certain new and useful Improvements in Etching Apparatuses, of which the following is a specification.

This invention relates to means for etching metal plates or the like with acids; and the object of the invention is to provide an apparatus adapted for effecting the etching or corrosion rapidly and uniformly.

To this end the apparatus consists, essentially, of a box or vessel which contains rotating devices for throwing the acid in spray or in a finely-divided state over the face of the object to be etched. The acid or acidulated etching fluid is in the bottom of the vessel and the rotary spreader is partly immersed therein. The plate or object to be etched is supported in the vessel with its face presented to receive the spray from the spreader.

In the accompanying drawings, which serve to illustrate embodiments of the invention, Figure 1 is a vertical longitudinal section of the apparatus, and Fig. 2 is a plan of the same with the cover omitted. Figs. 3 and 4 are views corresponding, respectively, to Figs. 1 and 2, illustrating an embodiment of the invention where the spreaders are of a kind different from those seen in Figs. 1 and 2. Figs. 5 and 6 are views similar, respectively, to Figs. 1 and 2, but showing an embodiment where only one rotary spreader is employed.

Referring primarily to Figs. 1 and 2, A is a box-like vessel or receptacle made from a material capable of resisting the etching fluid J contained therein. This vessel has a removable cover B. In the vessel A are rotatively mounted winged spreaders C, the axles D of which extend out through one side of the vessel and bear suitable wheels E, which are in peripheral contact, so that when one is rotated it will drive the other. On one of the shafts D is secured a pulley G, which may be driven through a belt F, (indicated only in dotted lines in the drawings.) This driving mechanism is adapted to rotate the spreaders rapidly in opposite directions, and any suitable motor or power may be employed to drive them. At the upper part of the vessel, above the spreaders, the object or plate H to be etched rests on suitable supports I, with its face presented downward. When the spreaders are rotated, the acid or etching fluid is thrown upward against the plate H and spread evenly over the same. Acting in a continuous manner to etch or corrode away the metal of the plate the constant renewal of the fluid washes away that which has combined with the metal, this latter falling back into the vessel to mix with the body of fluid J. Thus the metal is constantly subjected to the action of substantially fresh etching fluid.

In the embodiment of Figs. 3 and 4 the apparatus is precisely the same as that of Figs. 1 and 2, except in respect of the spreaders. In the construction shown in Figs. 3 and 4 the spreaders K are in the form of perforated cylinders, which by rotation in the body of fluid J take up the fluid and throw it up against the plate H in the form of spray.

The embodiment seen in Figs. 5 and 6 shows but one spreader C′, and it also shows the plate H to be etched set inclined. Obviously the wheels E will not be required where only one spreader is employed. In this construction the fluid thrown on the plate or object will flow down the inclined surface thereof and drip back into the body of fluid below.

In the apparatus described the etching fluid will be applied over the entire surface of the plate or object in a uniform manner, and owing to this fact autotypes may be produced therewith automatically—that is, without any coating or retouching by hand during the etching operation. However, if desired, the plate or object may be retouched by hand during the etching operation.

The wheels E may be friction-wheels which drive by frictional contact of their peripheries. Any object may be etched. That shown in the drawings is a plate.

Having thus described my invention, I claim—

1. An etching apparatus consisting of an acid-proof receptacle to contain the etching fluid, a support therein for the object to be etched, and a rotating spreader in said receptacle for throwing said fluid in spray onto the surface of the object to be etched.

2. An etching apparatus, consisting of an acid-proof receptacle to contain the etching

fluid, a support therein for the object to be etched, and a rotary spreader mounted on a horizontal axis in the receptacle and provided with blades adapted to dip in the body of fluid in the vessel.

3. An etching apparatus consisting of an acid-proof receptacle to contain the etching fluid, said receptacle having a cover and supports for the object to be etched, a rotary spreader mounted in said receptacle, the axle of said spreader having rotative bearings in the sides of the receptacle, and means exterior to the receptacle for rotating said spreader.

4. An etching apparatus consisting of an acid-proof receptacle to contain the etching fluid, a support therein which holds the object to be etched in an inclined position, and a rotating spreader in said receptacle which throws the etching fluid in the form of spray on the inclined face of the object to be etched.

In witness whereof I have hereunto signed my name, this 22d day of August, 1902, in the presence of two subscribing witnesses.

JOHAN AXEL HOLMSTRÖM.

Witnesses:
VINCENT P. HANDLEY,
A. RAZZI.