

No. 854,953.

PATENTED MAY 28, 1907.

C. M. KNEPPLER.
APPARATUS FOR GRAINING METALLIC PLATES.

APPLICATION FILED OCT. 10, 1906.

2 SHEETS—SHEET 1.

Fig. 2.

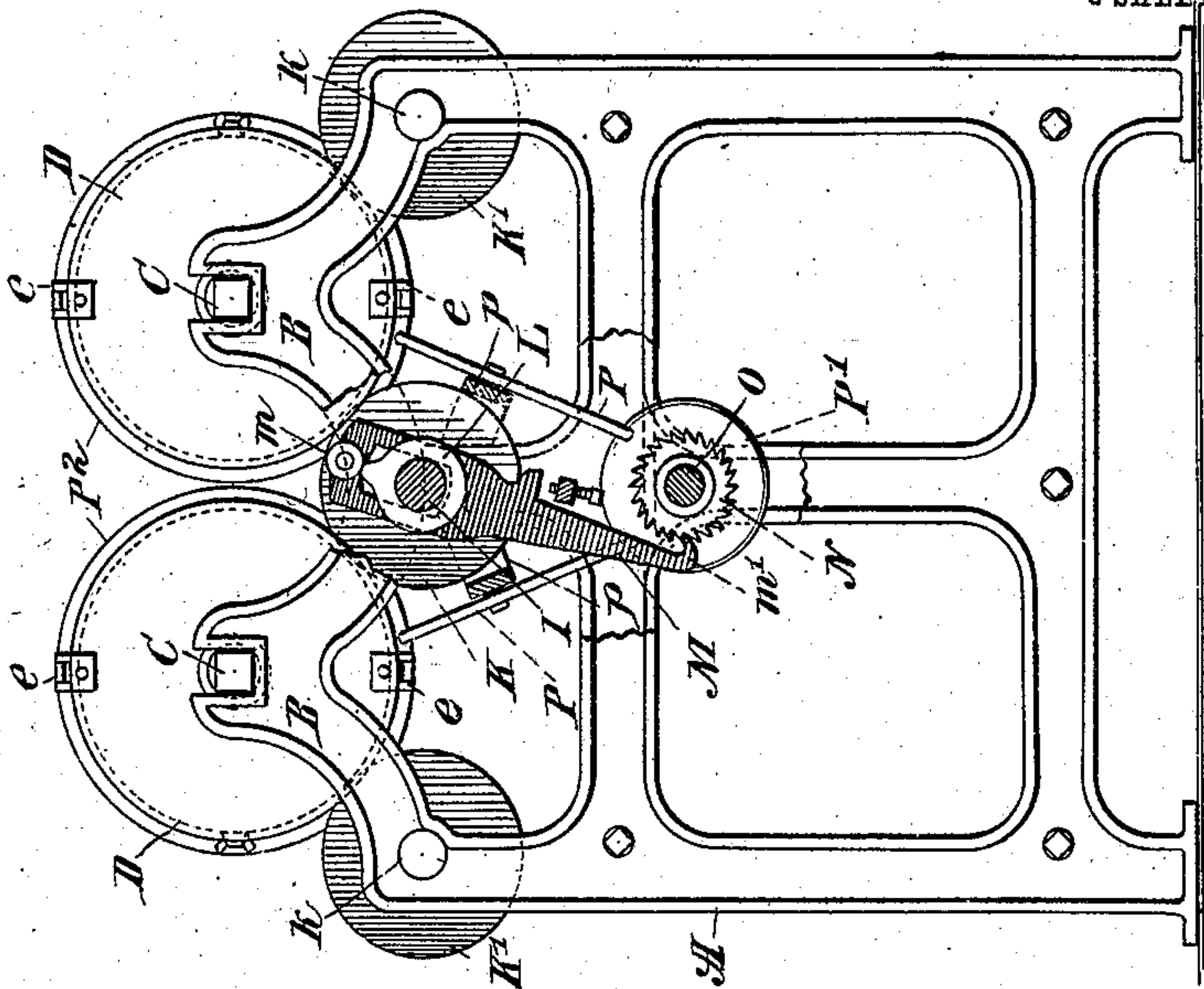
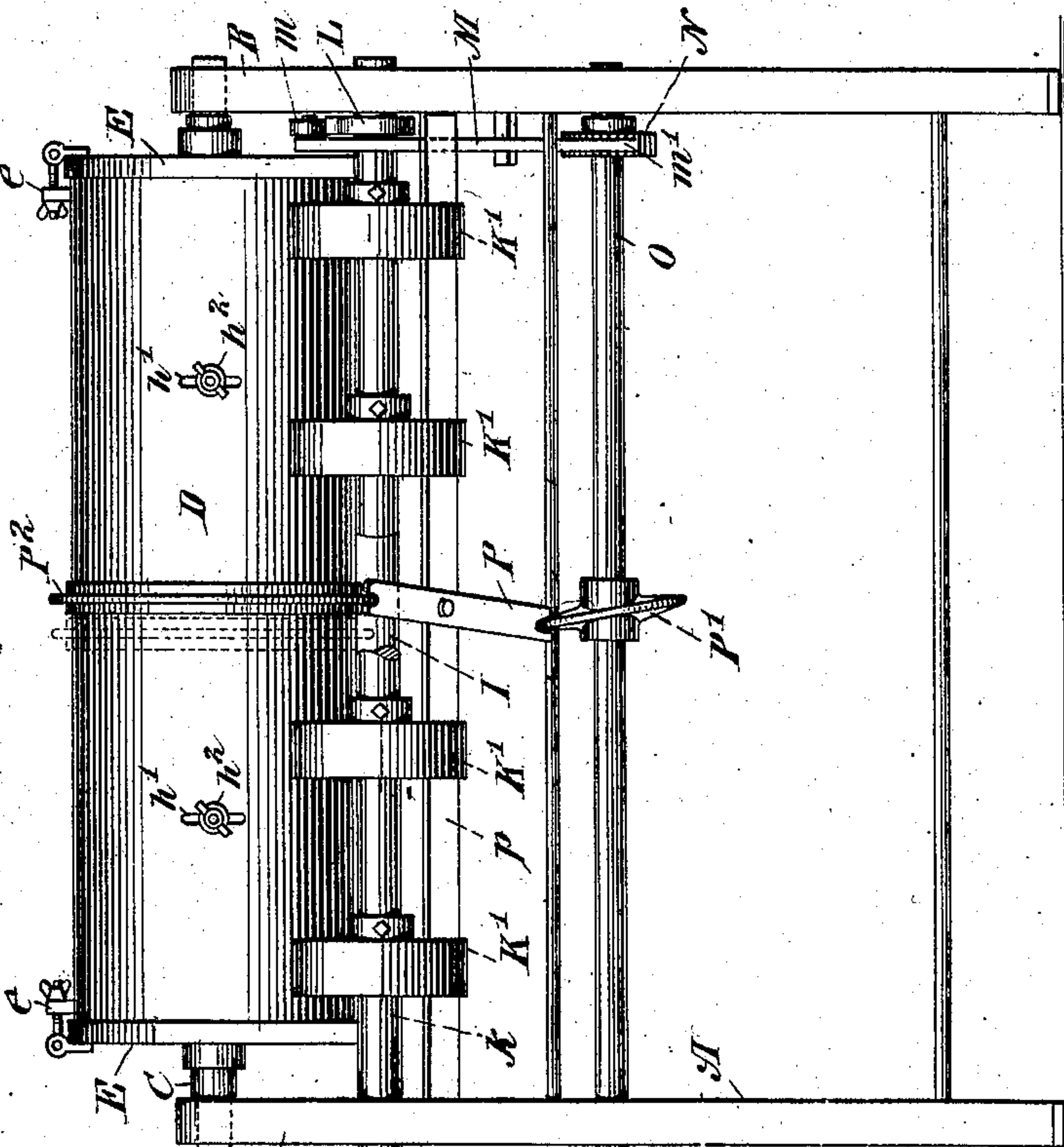


Fig. 1.



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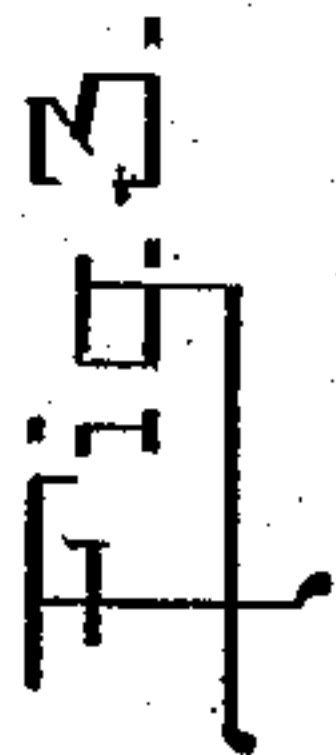
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APPARATUS FOR GRAINING METALLIC PLATES.

No. 854,953.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed October 10, 1906. Serial No. 338,238.

To all whom it may concern:

Be it known that I, CHARLES M. KNEPPLER, a citizen of the United States, and a resident of New York, borough of Brooklyn, in the county of Kings and State of New York, have made and invented certain new and useful Improvements in Apparatus for Graining Metallic Plates, of which the following is a specification.

My invention relates to an improvement in apparatus for graining metallic plates, such as zinc or aluminium, employed in surface printing in lieu of lithographic stone, the object being to provide a device of this character which shall be simple and cheap to construct, and efficient in use.

A further object of my invention is to so construct the device that the metallic plate may be grained while in a curved or cylindrical form, in order that when opened or flattened, additional "life" or quality will be imparted thereto.

A further object of my invention is to so construct the device that while in operation, but little noise and vibration will be caused thereby; and further, to adapt the machine for the graining or treatment of two or more plates at one time.

With these and other ends in view, the invention consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view inside elevation of my improved apparatus. Fig. 2 is a view in end elevation thereof. Fig. 3 is a longitudinal sectional view thereof. Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3. Fig. 5 is a sectional view taken on the line 5—5 of Fig. 3. Fig. 6 is a similar view showing the apparatus containing two plates.

Referring to the drawings, A represents a frame constructed of metal or wood, and of any desired shape or size, the ends thereof being provided with the brackets B adapted to support the ends of the shaft C. On this shaft C is mounted the cylinder D, adapted to revolve and of reciprocate thereon, said cylinder being provided with the removable ends E secured of said cylinder by means of the clamps e. To the shaft are removably secured the perforated plates or disks F, so separated as to allow the curved metallic

plate G to be contained between the same when properly located within the cylinder D for graining.

Within the cylinder D is contained the clamping plate H, provided with the bolts h extending upwardly through holes or openings h^1 formed in the cylinder, winged nuts h^2 being threaded on said bolts and bearing on the outer side or surface of said cylinder for tightly securing the clamping plate H in position. Within the cylinder D is contained the plate G, bent into cylindrical form, as illustrated in Fig. 5, to be nicely contained therein, the adjacent edges of the same being locked or clamped against the inner side or surface of the cylinder by the clamping plate H.

As illustrated in Fig. 6, the clamping plate H with its attachments, may be duplicated upon opposite sides of the cylinder, in order that two or more plates G may be clamped within said cylinder and treated simultaneously.

In the frame A of the machine is mounted the shaft I, provided with the tight and loose pulleys i and i' , respectively, and through which pulley i , power is transmitted to the machine. On the shaft I, and revolving therewith, are tightly secured the wheels or rollers K, and to the shafts k , mounted in the frame A, are secured the rollers or wheels K' , the cylinders D resting thereon.

From the above it will be understood that when motion is imparted to the shaft I through the pulley i , the wheels or rollers K will impart a rotary movement to the cylinders D resting thereon.

To the shaft I is tightly secured the cam L, and loosely mounted on the shaft I is the pawl M, provided on one end with the roller m adapted to engage the cam L, the lower end of said pawl being provided with a hook or catch m' wherewith to engage the ratchet wheel N tightly secured to the shaft O, the ends of which are mounted in the frame A of the machine.

On the cross bar p of the frame is fulcrumed the lever P, one end of which engages the cam wheel P' , the opposite end engaging with the flange P^2 encircling the cylinder D.

It will be understood from the above that when the shaft I is rotated, the riser or projection on the cam at each revolution will come in contact with the roller m , thereby

raising the pawl M, the lower hook end thereof engaging with the ratchet N, causing the latter to rotate one notch. As the cam L revolves, the pawl M will drop by gravity, the lower bent end *m'* engaging with the next lower tooth of the ratchet N. As the pawl is thus raised from time to time, the shaft O is rotated, thereby causing the lever P engaging with the cam P', to move to the right and left, thereby effecting a slight intermittent or step by step reciprocating movement of the cylinders D.

Within the bent plate or plates G, located within the cylinders, is contained the graining material R, consisting of pebbles, gravel, marbles, sand, pumice stone, or other desired material, such being selected as will produce the fine or coarse grain desired.

When motion is imparted through the pulley *i* to the shaft I, the cylinders D will be slowly rotated, and at the same time intermittently moved toward and away from the ends of the frame, such movement preventing any circular streaks or lines on the contained plates, as would likely happen should the graining material and cylinder be not moved longitudinally with relation to each other.

With the device as above described, I am enabled to treat or grain a metallic plate curved or bent into cylindrical form, or in the arc of a circle, in which condition the pores of the inner surface of the plate are closed. Upon flattening this plate after being grained, I have found that the surface is of far better quality, and contains much more "life" than one which is grained or treated while flat. Furthermore, I am enabled by its use, to simultaneously treat two or more plates, and by reason of the slow and even rotation of the cylinders D, and its slow reciprocating end or longitudinal movement, the noise and vibration incident to the use of the ordinary machine, is entirely avoided.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an apparatus of the character described, the combination with a cylinder, of means attached to said cylinder for clamping a plate in position contained within said cylinder, means for rotating said cylinder and

means for imparting a step by step longitudinal movement thereto, substantially as described.

2. In an apparatus of the character described, the combination with a cylinder, of means attached to said cylinder for clamping a plate therein, means for rotating said cylinder, and means for imparting an intermittent reciprocating movement thereto, substantially as described.

3. In an apparatus of the character described, the combination with a cylinder, of means attached to said cylinder for clamping a plate therein, means for rotating said cylinder, and means for simultaneously imparting a step by step longitudinal movement thereto, substantially as described.

4. An apparatus of the character described, the combination with a cylinder, of means attached to said cylinder for clamping a plate therein, means for rotating said cylinder, and means for simultaneously imparting an intermittent reciprocating movement thereto, substantially as described.

5. In an apparatus of the character described, the combination with a cylinder, of means attached to said cylinder for clamping a plate therein, means for rotating said cylinder, and means for intermittently advancing said cylinder in the direction of its length, substantially as described.

6. In an apparatus of the character described, the combination with a rotating cylinder provided with means for clamping a plate therein, a shaft provided with rollers on which said cylinder rests for rotating the same, a cam mounted on said shaft, a pawl mounted on said shaft and engaging said cam, a shaft provided with a ratchet engaging said pawl and with a cam, and a lever engaging said latter cam and cylinder whereby the latter is given an intermittent longitudinal movement, substantially as described.

Signed at New York, borough of Manhattan, in the county of New York, and State of New York, this ninth day of October, A. D. 1906.

CHARLES M. KNEPPLER.

Witnesses:

GEORGE COOK,
M. VAN NORTWICK.