

No. 681,964.

Patented Sept. 3, 1901.

C. HURST.

MACHINE FOR LEVELING ELECTROTYPES.

(Application filed June 15, 1901.)

(No Model.)

2 Sheets—Sheet 1.

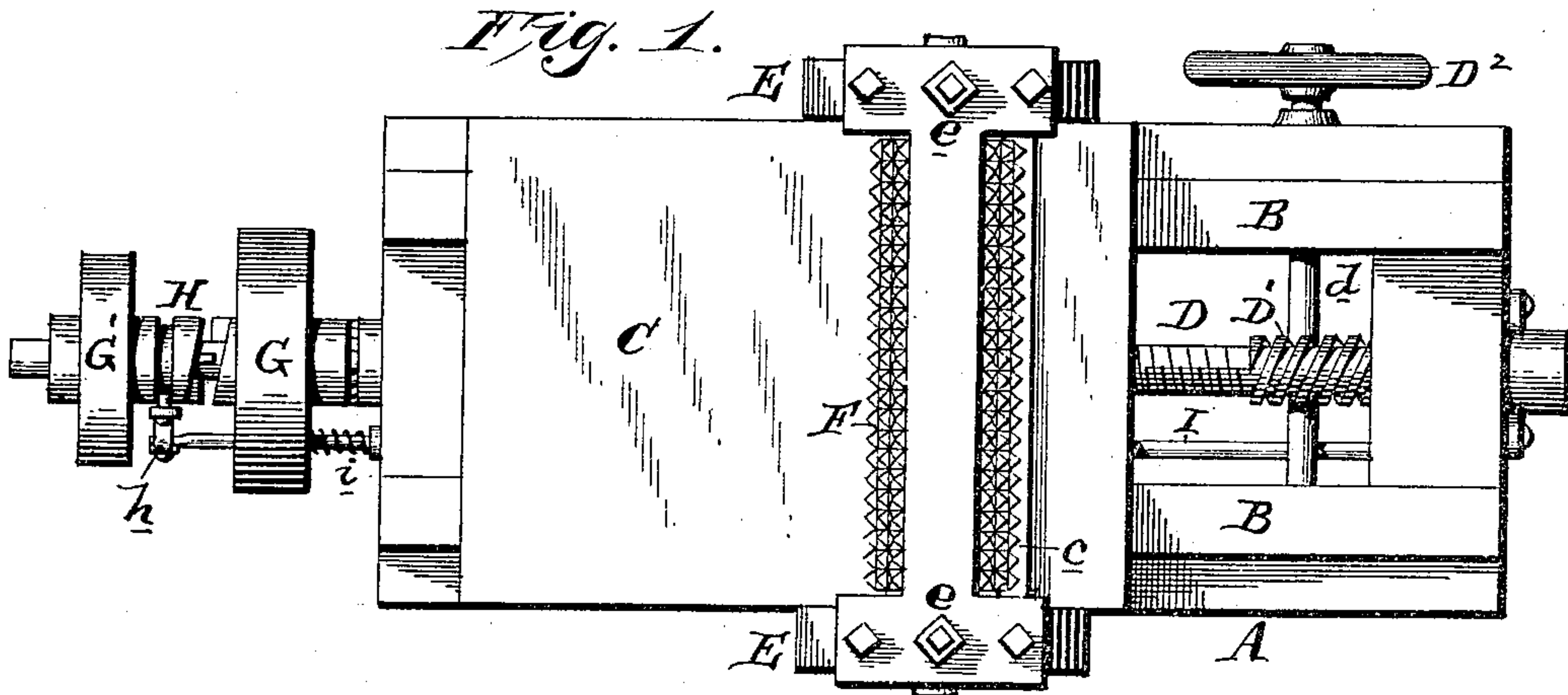


Fig. 2.

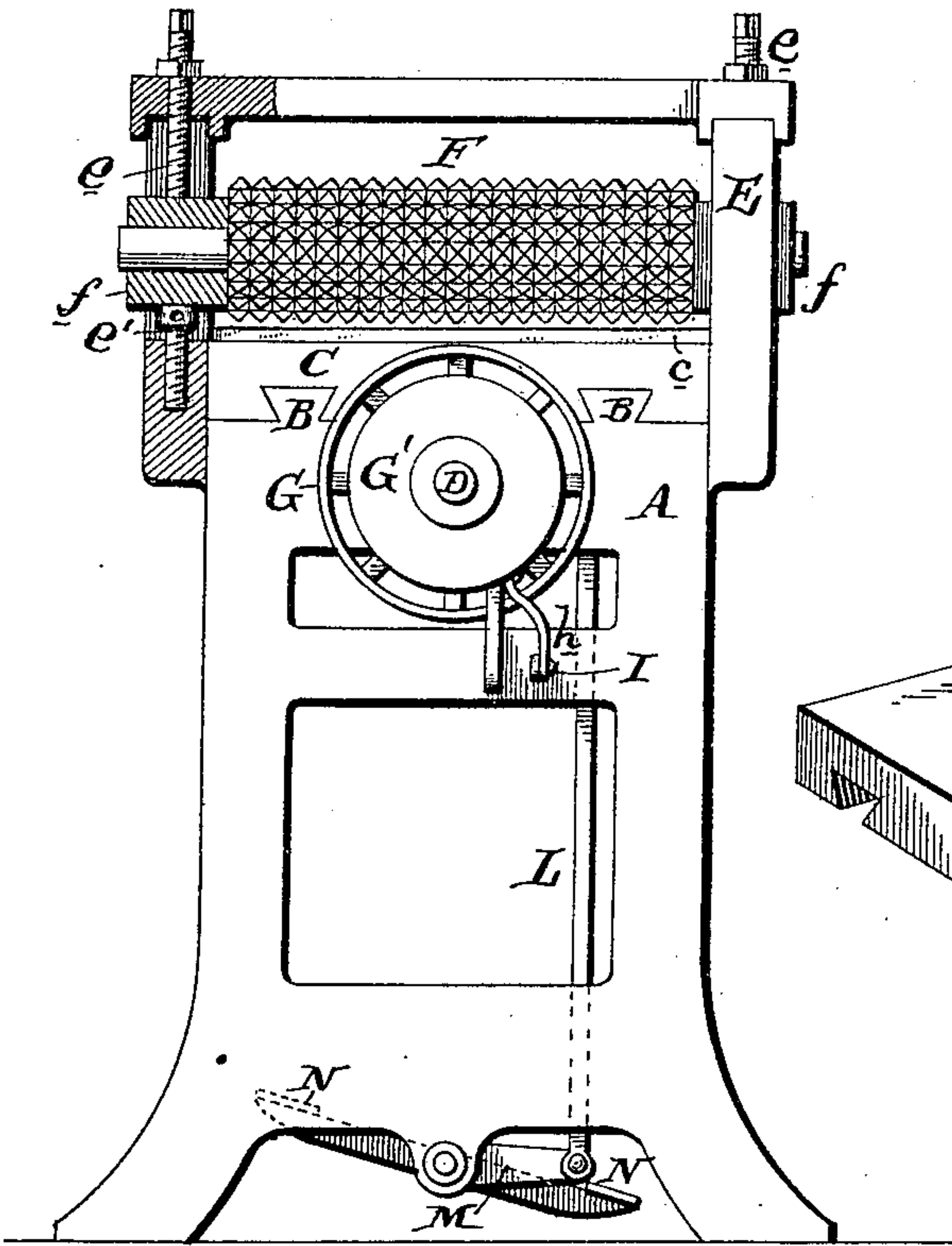
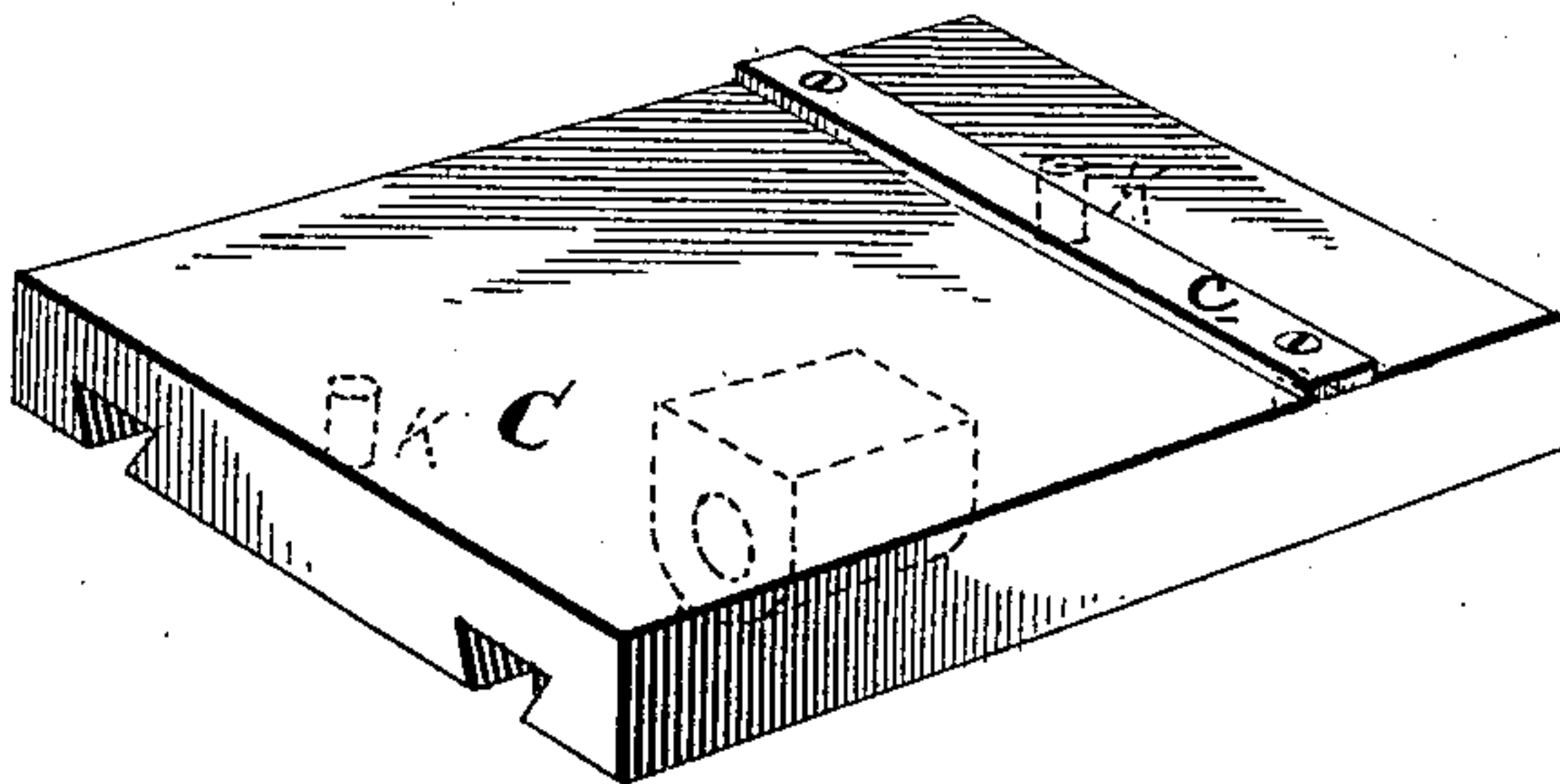


Fig. 4.



Witnesses:

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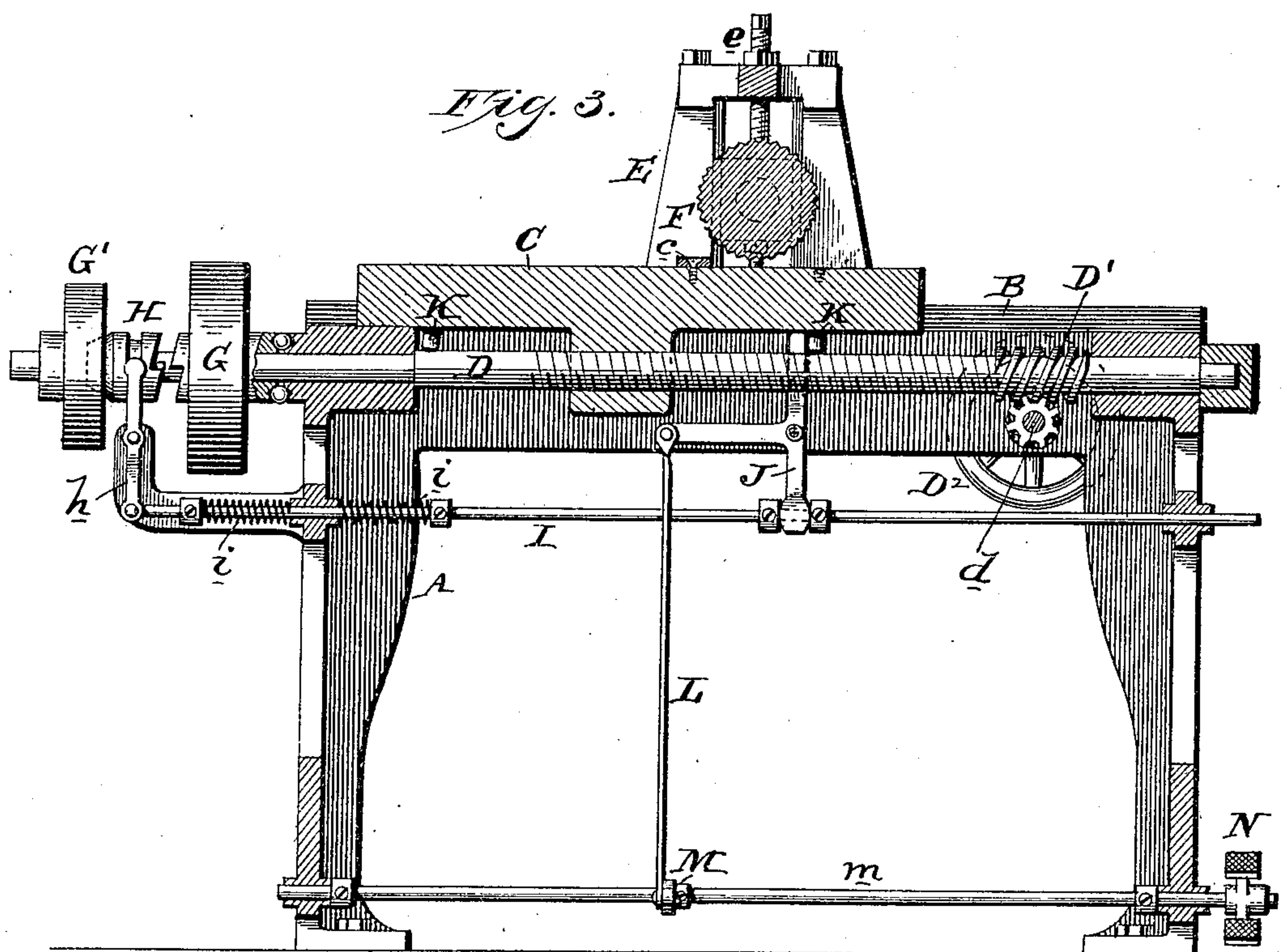
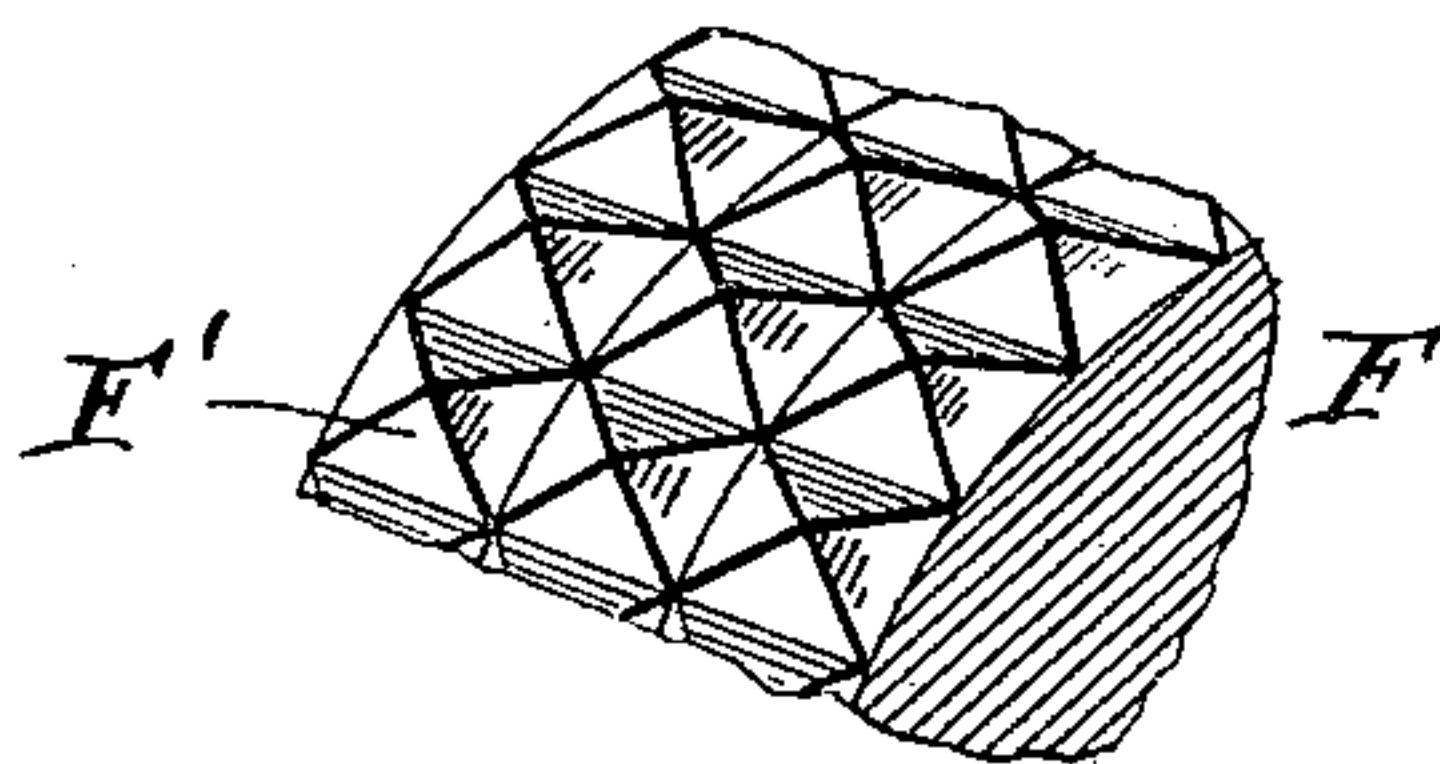


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES HURST, OF BROOKLYN, NEW YORK.

MACHINE FOR LEVELING ELECTROTYPES.

SPECIFICATION forming part of Letters Patent No. 681,964, dated September 3, 1901.

Application filed June 15, 1901. Serial No. 64,686. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HURST, of Brooklyn, Kings county, State of New York, have invented an Improvement in Machines
5 for Leveling Electrotypes, of which the following is a specification.

My invention has reference to machines for leveling electrotypes; and it consists of certain improvements which are fully set forth in
10 the following specification and shown in the accompanying drawings, which form a part thereof.

Heretofore it has been customary in electrotyping to subject the electrotypes, after it
15 has been backed up and planed, to a hand operation consisting of placing the electrotypes face downward upon a suitable metal plate or anvil and subjecting the lead back at different places to pressure produced by a die
20 with a roughened surface struck with a hammer. This process is intended to cause the printing-surface of the electrotypes to assume a very level condition. It is a slow operation, and as it requires special care on the part of
25 the operator selecting the places to be treated and in delivering the blows it is objectionable.

The object of my invention is to provide a
30 suitable machine which will perform the same results of leveling the electrotypes in a cheap, speedy, and efficient manner and without any special care or skill on the part of the operator.

In carrying out my invention I provide a
35 suitable frame in which is journaled a roller having its surface provided with a series of projections or small points and properly supported in bearings, combined with a reciprocating table or carrier, upon which the electrotypes are placed face downward and mechanically fed beneath the roller, whereby the electrotypes are positively conveyed with the table
40 and has its back subjected throughout its entire surface to the action of the projecting portions of the roller, with the result that
45 every portion of the electrotypes which is not resting flat upon the smooth level surface of the table is forced downward, so as to become perfectly level. The table is reciprocated by a suitable screw-feed, which has preferably a
50 slow motion forward and a quick motion backward. I further prefer that the machine

shall be furnished with hand-operated means to adjust the table irrespective of the power devices to reciprocate it.

My invention further comprehends features
55 of construction set out hereinafter and more particularly pointed out in the claims.

My invention will be better understood by reference to the drawings, in which—

Figure 1 is a plan view of my improved
60 machine. Fig. 2 is a rear end elevation of same. Fig. 3 is a longitudinal sectional elevation of same. Fig. 4 is a perspective view of the reciprocating table, and Fig. 5 is a perspective view of a portion of the surface
65 of the pressure-roller.

A is the main frame of the machine and may be of any suitable construction desired.

C is a reciprocating table guided upon the
70 guides B at the upper portion of the main frame. This table has a flat or smooth level top and a cross-plate *c* near one end, which is adapted to form a shoulder, against which the electrotypes rest.

D is a screw-shaft journaled in the upper
75 portion of the main frame and receives a boss on the bottom of the table C for the purpose of imparting a reciprocating motion to said table. This shaft D has loosely supported
80 upon its rear end and outside of the main frame the pulleys G and G', the former for rotating the shaft in one direction to feed the table forward and the latter for rotating the shaft in the other direction to feed the table
85 backward. The pulleys are of different sizes for imparting a slower forward movement to the table than the backward or return movement.

H is a clutch rotating with the shaft D and adapted to make positive connection with the
90 hub of the pulley G or frictional contact with the pulley G', or be held out of connection with both pulleys. This clutch H is moved into engagement with either pulley G or G' by a lever *h* and rod I. The rod I is normally
95 held in an intermediate position by springs *i i*, and thereby throws the clutch H out of operation with the pulleys G G'. The rod I may be shifted by a T-shaped lever J, having one arm loosely connected with said rod I and
100 another arm connected with a rod L, extending down to a crank M on a rock-shaft *m*.

The rock-shaft *m* is extended to the front end of the machine and provided with a cross or double pedal *N N*. If the foot is put upon one pedal, the parts will be operated to throw
 5 the clutch forward into wheel *G*, and upon placing the foot upon the other pedal the clutch is thrown backward into frictional contact with the wheel *G'*. In this manner the table *C* is caused to be propelled forward
 10 or backward. Now it is important that when the table reaches the end of its movement in either direction it shall be brought to rest, and this is accomplished by the pins *K K* on the table acting upon the third arm of the
 15 lever *J*. Assuming that the table is being fed forward, one of its pins *K* will ultimately strike the lever *J* and shift it, notwithstanding the foot-pressure upon the pedal, and the result is that the table positively pushes the
 20 clutch out of contact with the wheel *G*. The shaft *D* is then stationary and the table at rest. To return the table, the foot is pressed upon the other pedal *N*, and this throws the clutch *H* backward into frictional contact
 25 with the wheel *G'*, and the shaft *D* then begins to rotate in the opposite direction and returns the table, but with a more rapid movement than its forward movement, this being secured by having the pulley *G'* smaller
 30 in diameter than pulley *G*, both being adapted to be operated by belts having the same speeds of travel. When the table has fully returned, the other pin *K* shifts the lever *J* and causes the clutch *H* to move back and once more bring
 35 the shaft *D* to rest. In this manner the table is started by the operator and after its full movement is automatically arrested. If for any cause it is desired to adjust the table without putting it into connection with the
 40 power-wheels *G* and *G'*, I provide the following devices: A hand-wheel *D²* operates a transverse shaft *d*, and this connects with the screw-shaft *D* by means of miter spiral gears *D'*. The hand-wheel *D²* is revolved whenever
 45 shaft *D* is revolved, and, inversely, the shaft *D* may be revolved by rotating the hand-wheel *D²*, and by this means the table *C* may be adjusted by hand. Above the table *C* is a roller *F*, loosely journaled at its ends in bearings *f*, which are guided in upright guides *E*
 50 and held in adjusted positions therein by adjusting-screws *e* and *e'*. In this manner the operating-surface of the roller *F* may be brought nearer to or farther from the table *C*. The surface of the roller *F* is made roughened and preferably into a series of projec-
 55 tions *F'*, uniformly distributed over the surface, the object being to provide a large number of operating points or places upon the back of the electrotpe on the table. As shown, the
 60 projections *F'* are produced by grooving the surface of the roller circumferentially and longitudinally by a V-shaped tool. These projections are not intended to be sharp, but
 65 only so as to present a series of closely-arranged operating parts to press upon the back of the electrotpe, which is forced

against the roller while resting upon the table. The object of this is to treat the electrotpe (after it has been planed) to a distributed
 70 pressure for the purpose of causing its front face to flatten itself upon the smooth surface of the table and be perfectly level when in use in the printing-press. By employing
 75 a roller of this character the leveling action takes place without tendency to curl the electrotpe, which would result if the roller were smooth. Moreover, a smooth roller would
 80 have a tendency to roll up the lead back of the electrotpe and create a defective plate, while in the present construction the isolated
 85 projections act independently and cannot roll up the metal. The work produced by this machine is uniform and rapidly accomplished.

I do not confine myself to the details of construction here shown, as while they are excellently adapted to the purpose they may be greatly varied or modified without departing from the spirit of my invention.

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

1. In a machine for leveling electrotypes, the combination of a roller having its surface provided with closely-arranged projections, a
 95 movable electrotpe-supporting table having a smooth surface, and guides for guiding the table at a fixed distance from the surface of the roller.

2. In a machine for leveling electrotypes, the combination of a roller having its surface provided with closely-arranged projections, a
 100 movable electrotpe-supporting table having a smooth surface, guides for guiding the table at a fixed distance from the surface of the roller, power devices for reciprocating the
 105 table, manually-controlled devices for putting the power devices into operation, and automatic means controlled by the table for
 110 throwing the power devices out of action for arresting the table.

3. In a machine for leveling electrotypes, the combination of a roller having its surface provided with closely-arranged projections, a
 115 movable electrotpe-supporting table having a smooth surface, guides for guiding the table at a fixed distance from the surface of the roller, a screw-shaft for reciprocating the
 120 table, a hand-wheel and shaft for operating the screw-shaft, and gearing between the screw-shaft and the shaft of the hand-wheel.

4. In a machine for leveling electrotypes, the combination of a roller having its surface provided with closely-arranged projections, a
 125 movable electrotpe-supporting table having a smooth surface, guides for guiding the table at a fixed distance from the surface of the roller, power devices for reciprocating the
 130 table, manually-controlled devices for putting the power devices into operation, automatic means controlled by the table for throwing the power devices out of action for arresting the
 135 table, a screw-shaft for reciprocating the

table, a hand-wheel and shaft for operating the screw-shaft, and gearing between the screw-shaft and the shaft of the hand-wheel.

5 5. In a machine for leveling electrotypes, the combination of a roller having its surface provided with closely-arranged projections, a movable electrotypesupporting table having a smooth surface, guides for guiding the table at a fixed distance from the surface of the
10 roller, power devices for moving the table forward and backward but in which the forward speed is slower than the back speed, and manually-controlled devices for controlling the operation of the power devices.

15 6. In a machine for leveling electrotypes, the combination of a roller having its surface provided with closely-arranged projections, a movable electrotypesupporting table having a smooth surface, guides for guiding the table at a fixed distance from the surface of
20 the roller, power devices for moving the table forward and backward but in which the forward speed is slower than the back speed, manually-controlled devices for controlling the operation of the power devices and automatic devices to arrest the action of the power
25 devices when the table has reached the end of a reciprocation.

30 7. In a machine for leveling electrotypes, the combination of a roller having its surface provided with closely-arranged projections, a movable electrotypesupporting table having a smooth surface, guides for guiding the table at a fixed distance from the surface of the
35 roller, a screw-shaft to reciprocate the table,

two driving-wheels adapted to rotate in opposite directions, a clutch device on the screw-shaft and movable longitudinally thereon for connection with either of the driving-wheels, manually-operated devices for shifting the
40 clutch into connection with the driving-wheels, and automatic devices for shifting the clutch out of connection with said driving-wheels.

8. The combination of the main frame, a
45 roller journaled therein and having its surface grooved longitudinally and circumferentially to form a series of distributed projections, a reciprocating table having a smooth surface movable under the roller, and having
50 a projecting shoulder for pushing the electrotypes under the roller.

9. In a machine for leveling electrotypes, the combination of a roller having its surface provided with closely-arranged projections, a
55 smooth table upon which the electrotypes is placed face downward, a frame for holding the roller and table relatively at a fixed distance apart, and power devices for causing a relative movement between the table and
60 roller for causing the roller to traverse the whole back surface of the electrotypes on the table.

In testimony of which invention I have hereunto set my hand.

CHARLES HURST.

Witnesses:

W. T. DAY,
J. B. P. DAY.