

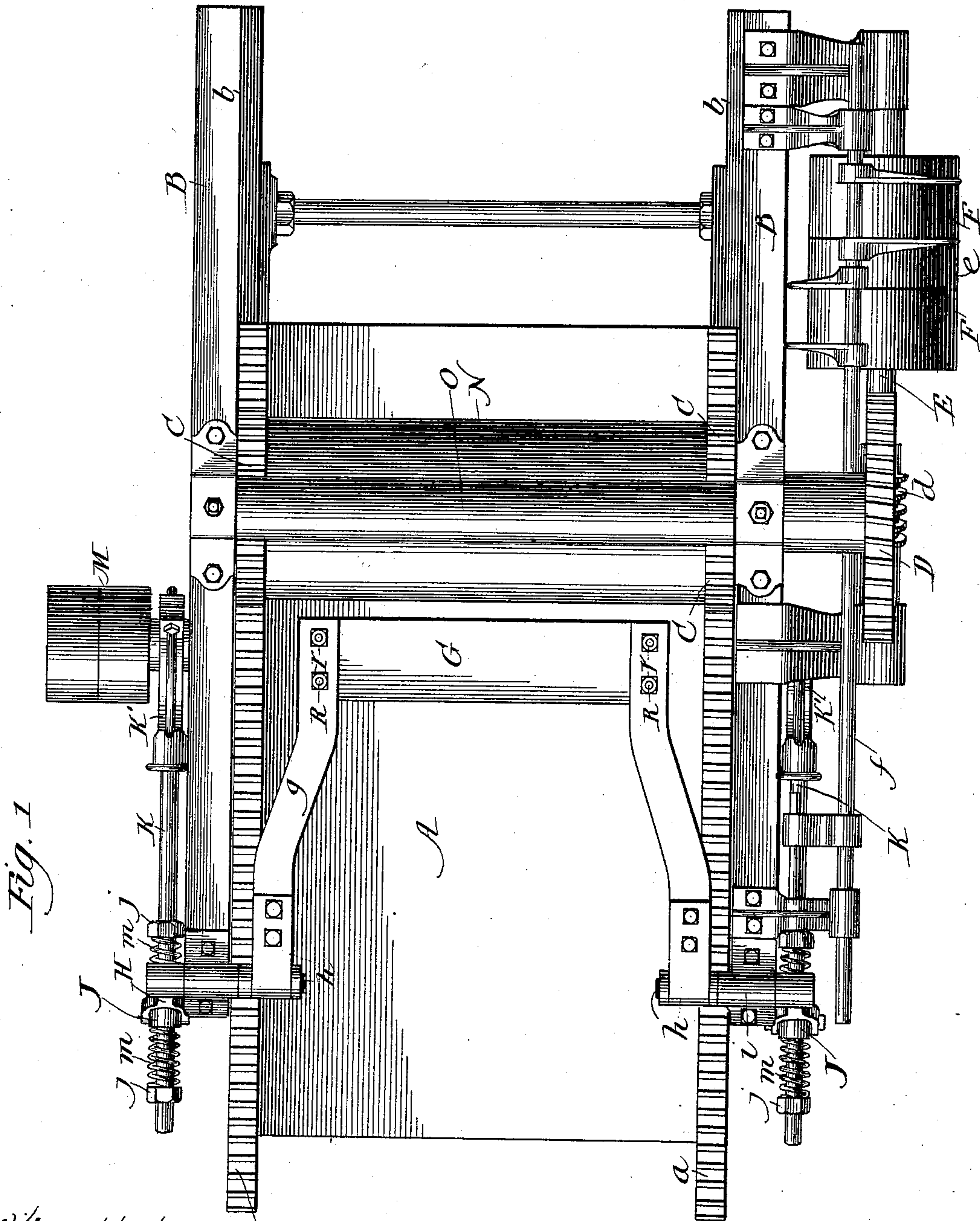
(No Model.)

3 Sheets—Sheet 1.

C. S. PARTRIDGE.
MATRIX MAKING MACHINE.

No. 407,608.

Patented July 23, 1889.



Witnesses:
H. M. Munday.
Lew. C. Curtis.

Inventor:
Charles S. Partridge
by Munday Evans & Aderck
his attys

(No Model.)

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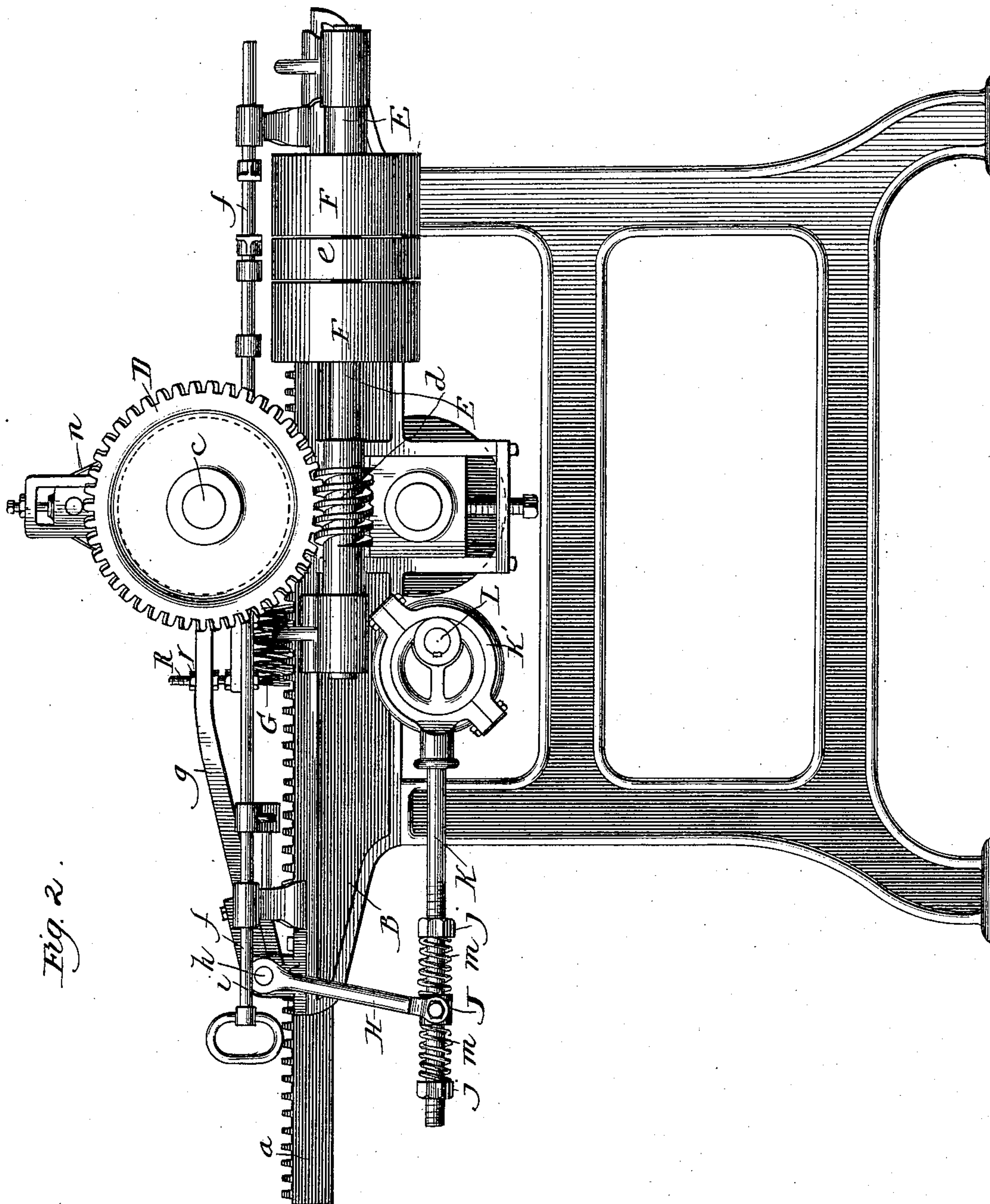


Fig. 2.

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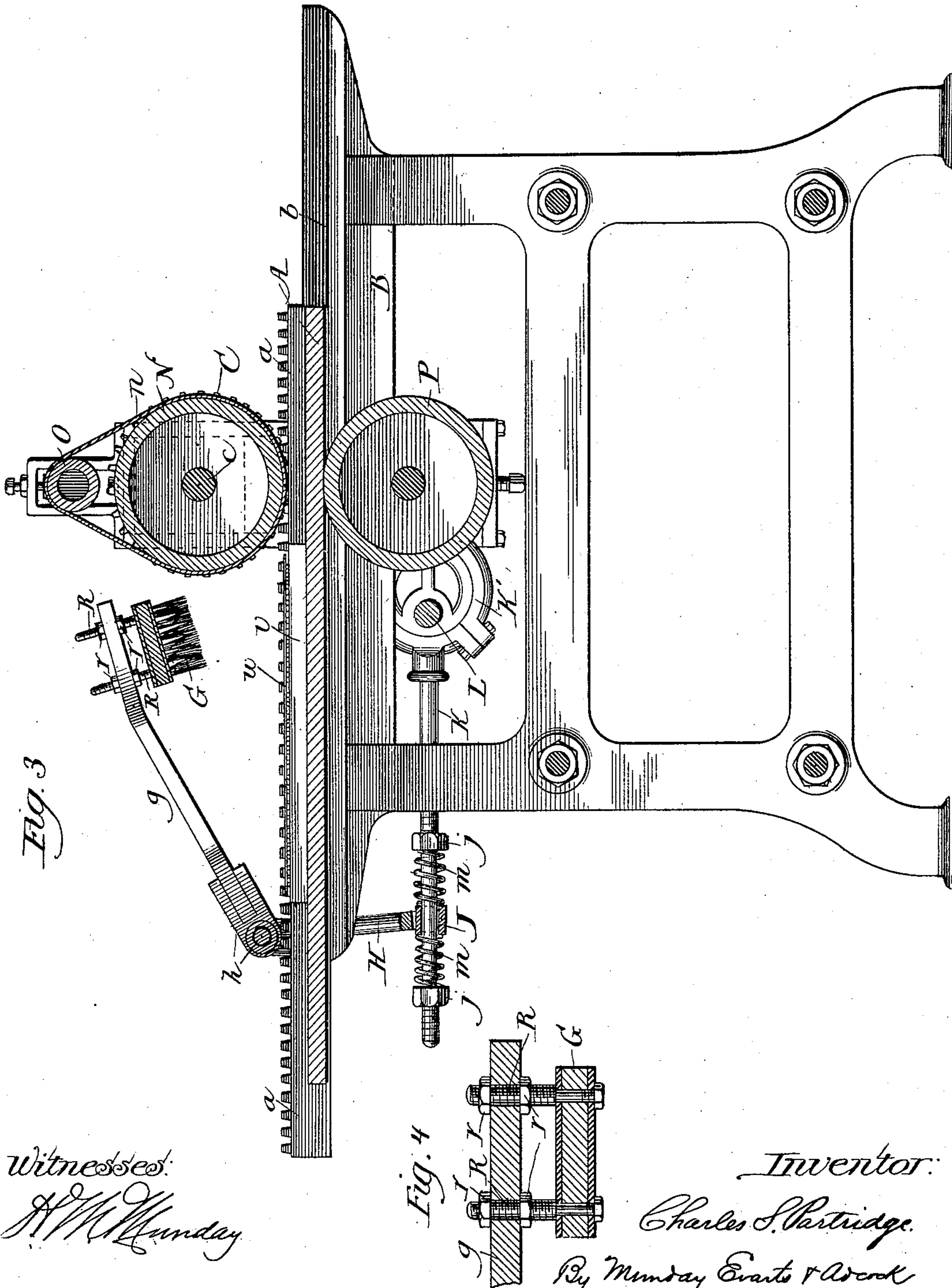
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UNITED STATES PATENT OFFICE.

CHARLES S. PARTRIDGE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE A. N. KELLOGG NEWSPAPER COMPANY, OF SAME PLACE.

MATRIX-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 407,608, dated July 23, 1889.

Application filed September 22, 1888. Serial No. 286,106. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. PARTRIDGE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Matrix-Making Machines, of which the following is a specification.

In making papier-maché matrices for use in the production of stereotype-plates it is customary to beat the soft matrix material, after it has been laid upon the form of type which is to be reproduced, with a bristle brush until the material has been forced into the hollows, recesses, and interstices of the type and into the blanks or open portions of the form and an accurate impression of the type-form has been produced in the matrix. The beating is continued until the material has penetrated the interstices, &c., to the depth requisite to avoid shallowness of the sunken or non-printing portions of the type, it being desirable that such portions shall be so much below the printing portions in the stereotype as to avoid "smutting" in printing therefrom. This beating operation requires considerable time, and is laborious work for the operator. Another method is to pass a pressure-roller over the matrix while it is on the type, a thick felt blanket or other cushion being interposed between the matrix and roller, so that the pressure of the roller will force the soft material of the matrix into the hollows and spaces of the type-form without uncovering the faces of the type. This method is quicker than the other and less laborious, but it is subject to serious objections. It is impossible by it to make a sufficiently deep mold without increasing the pressure to such a point as will injure the type, and to avoid this it is quite common to finish the mold by beating it with the hand-brush after it has been rolled. Where this is not done a shallow mold is produced, the stereotype-plates from which cannot be worked on printing-presses using very soft impression-blankets without smutting.

In this invention I have sought to produce a machine which will perform the operation of beating the papier-maché evenly and with results approximating those obtained by hand, and which will avoid at the same time the

evils found in the pressure-roller method of taking impressions from the type.

The machine which I have devised embodies a support or table upon which the type-form with its superimposed papier-maché may be placed, and a rapidly-vibrating brush located over the bed and adapted to beat the material into the type with light yielding blows analogous to those imparted by hand. There are also other features of novelty in the machine, which are fully set forth below.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a plan view of my improved machine. Fig. 2 is a side elevation, and Fig. 3 is a longitudinal vertical section, of the same. Fig. 4 is a detail showing the manner of attaching the brush to its carrying-arm.

In said drawings, A represents a table or support for the type-form, the chase of which appears at *v*, and the soft mold or matrix material laid thereon at *w*. Said table is preferably a reciprocating one, sliding on the ways *b* upon the frame B, and actuated by gears C, meshing with the racks *a* of the table. The gears C are mounted upon the cross-shaft *c*, which also carries a gear D, meshing with a worm *d* upon the longitudinal shaft E, driven by the pulley *e*. Idle-pulleys F are also provided on said shaft E, each of which has its own belt, one running in a contrary direction to the other, and both controlled by the shifter *f*, thus allowing the actuating of pulley *e* in either direction desired to produce the proper movement of the table by simply moving said shifter to throw the proper belt upon the pulley *e*.

G is the brush for beating the mold into the form. It extends across the table and is carried by arms *g*, which are secured to short journals *h*, the latter having bearings at *i* and carrying crank-arms H. Said arms H, in connection with journals *h* and arms *g*, form bell-crank levers, and are forked at their lower ends and pivotally joined to the boxes J, loosely encircling the eccentric-rods K, actuated by eccentrics K' upon the cross-shaft L, driven by a third belt applied to pulley M. The eccentric-rods carry nuts *j* at

either side of the boxes J, and interposed between such nuts and the boxes are springs *m m*, so that as such eccentric-rods are moved back and forth they apply a yielding force to the crank-arms H, which is transmitted to the brush, causing the latter to strike quickly but lightly upon the matrix. This construction prevents the brush from striking positive or, as they might be termed, "dead" blows, such as would be caused if all the actuating parts were rigid and unyielding and the range of movement of the brush was accurately and precisely limited and controlled. In the latter case, if the mechanism was so adjusted that the brush at the lowest point of its stroke should simply touch the form it would be ineffective, while, on the other hand, if it reached too low a point, it would be forced through the matrix and ruin the mold, so that perfect adjustment of the brush would be very essential; but with the elastic actuating devices the stroke accommodates itself to the necessities of the case, avoiding injury to the mold on the one hand and insuring effective work on the other. Very accurate adjusting of the brush is not requisite; but I find it to do the best work when set to reach a level slightly below the level of the form. With each movement the springs at one side of the swivel-boxes J will be compressed and those at the other side relaxed, allowing the eccentric-rods to pass through the boxes, while the instant recovery of the springs helps to induce a rebound of the brush, thus closely imitating the hand-beating.

The brush may be made of any length necessary to cover the widest form, and also be wide or narrow, as desired. For ordinary newspaper-work I prefer a brush about six inches in width and long enough to cover both type and chase, for the following reasons: It is usually the case that some of the pages of the daily papers are made up of display matter and the spaces between the lines and words of such matter are very large. With a small brush there would be danger that a blow such as would be just sufficient for solid matter would be too severe for the open-work display matter; but by making the brush long enough to cover both chase and type, or about six inches in width, danger of this kind will be avoided, as the chase will hold the brush up and so limit its stroke within safe range.

While the mechanism thus far described is capable of use with good results and a saving of time and labor, I prefer to pass the matrix as it leaves the brush under a pressure-roller N upon the shaft *c*, such roller being covered

by a soft blanket *n*, carried over and kept tight by an upper roller O. By the pressure of roller N the matrix is farther impressed into the types, and more particularly into the spaces of the form, and any imperfections in the work of the brush are corrected. The pressure of this roller is much less than that heretofore employed in roller-matrix machines and not sufficient to do injury to the type, but I deem its use saves some portion of the brush beating. The matrix having passed once under both brush and roller, as described, should be ready to receive the backing-powder.

P is an idle-roller located under the table and in the same vertical plane with the pressure-roller N. It is intended to take the strain caused by said roller N and relieve the friction, which would otherwise be caused between the table and its slideways.

The brush is preferably made adjustable at its attachment to the arms *g*, so that all parts of its surface may be made to come in contact with the form, and so the wear may be taken up. This result is obtained by means of the supporting-bolts R and the nuts *r*, mounted thereon at either side of the arms *g*.

I claim—

1. The combination, with the table for supporting the form to be stereotyped, of an elastically-operated beating-brush located over the table and adapted to beat the matrix material into the type, substantially as specified.

2. In a machine for impressing the matrix upon the type, a vibrating brush and its carrying-levers, in combination with the eccentric-rods and the springs by which the actuating-power transmitted to the brush is rendered elastic, substantially as specified.

3. In a machine for impressing the matrix upon the type, a vibrating brush and its carrying-levers, in combination with the eccentric-rods and the springs interposed between said levers and the stops at both sides of the levers, substantially as specified.

4. In a machine for impressing the matrix upon the type, the combination of a vibrating brush for beating the matrix and a pressure-roller for pressing it with a traveling table for carrying the form under said brush and roller, substantially as specified.

5. The combination of the vibrating brush, the pressure-roller, the blanket, roller O, and the moving table, substantially as specified.

CHARLES S. PARTRIDGE.

Witnesses:

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