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Fig. II.

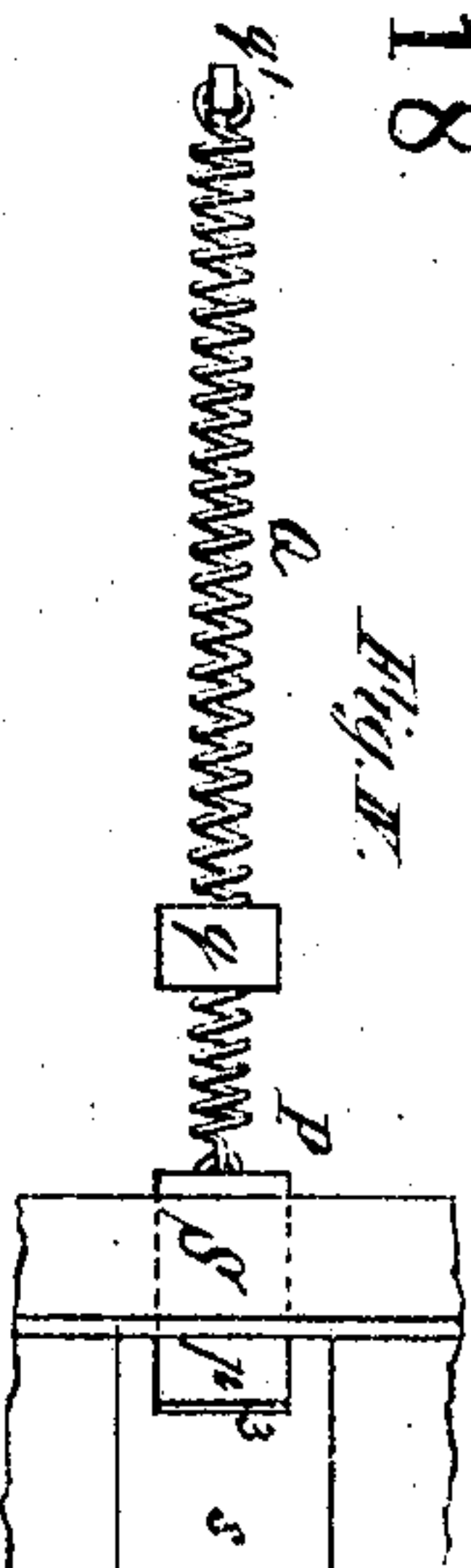


Fig. IV.

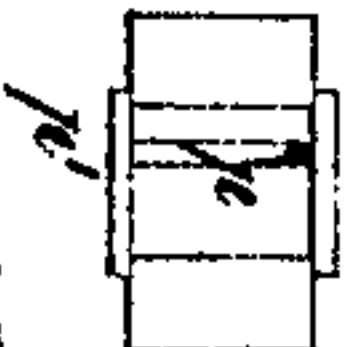


Fig. V.

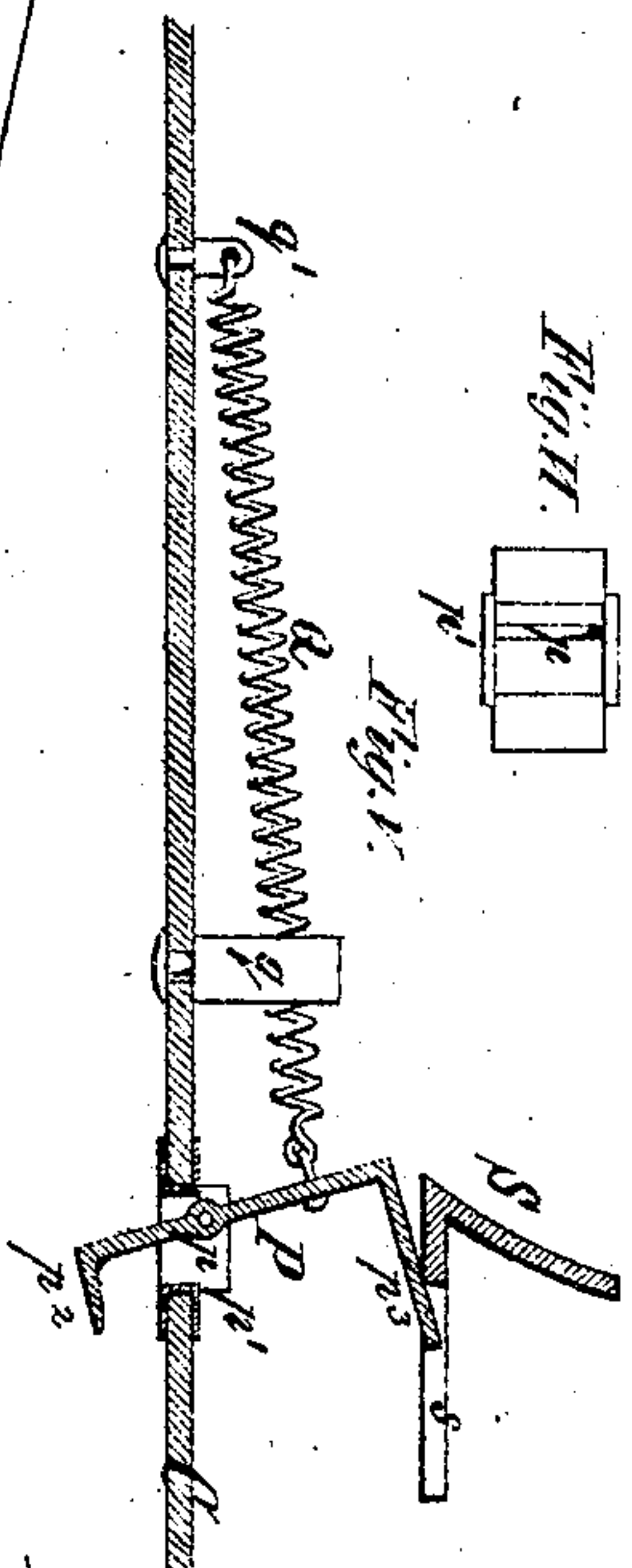


Fig. I.

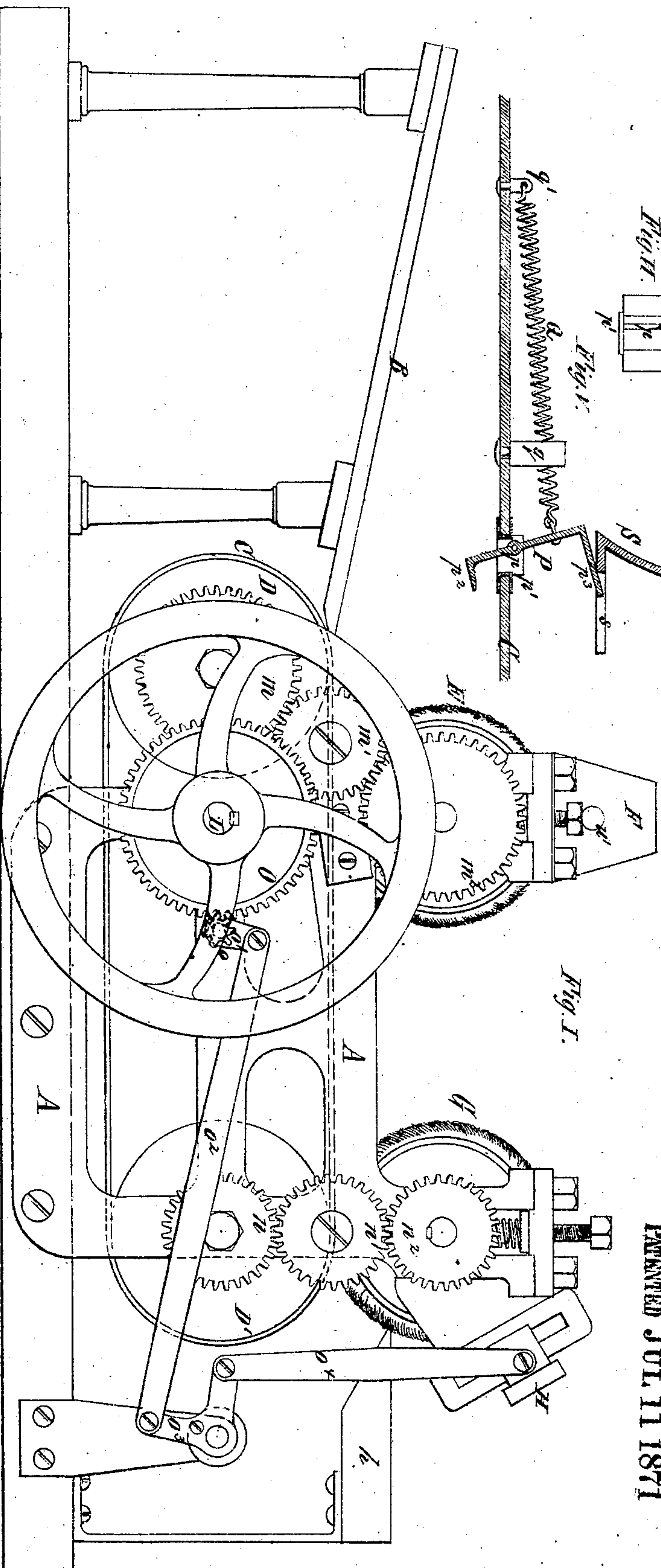
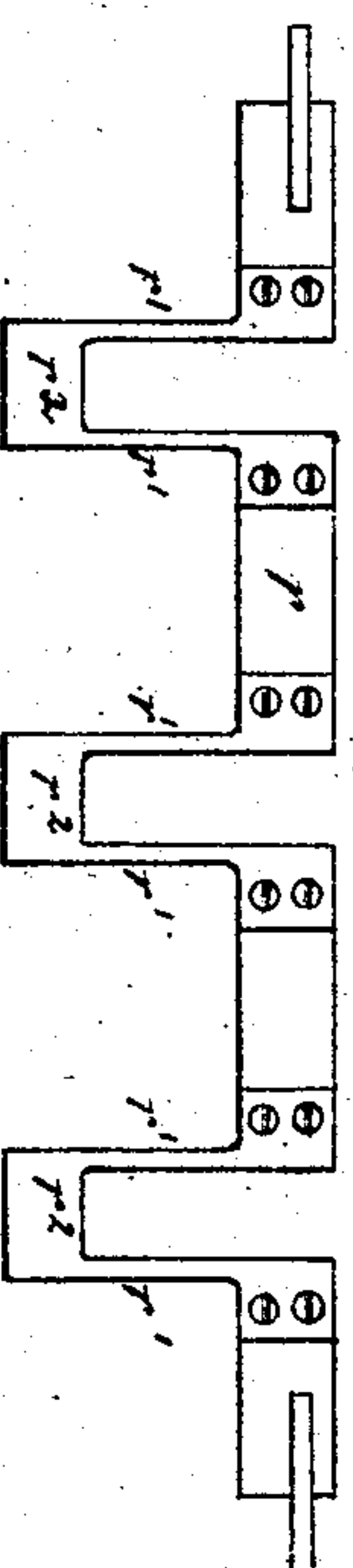


Fig. III.



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Edward F. Benton's
Improvements in Brnzing Machines.

PATENTED JUL. 11 1871

Edward F. Benton's Improvements in Bronzing Machines.

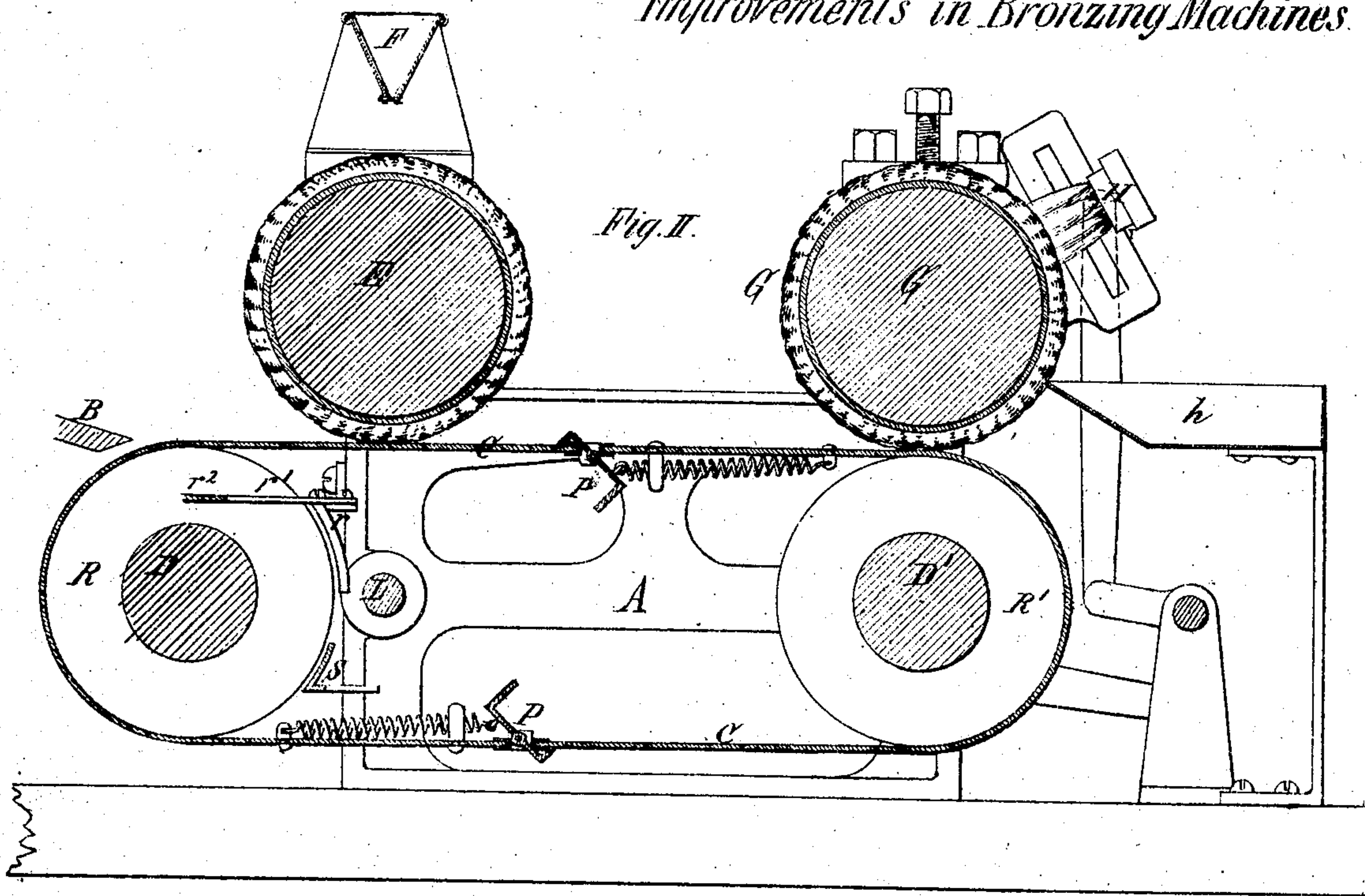
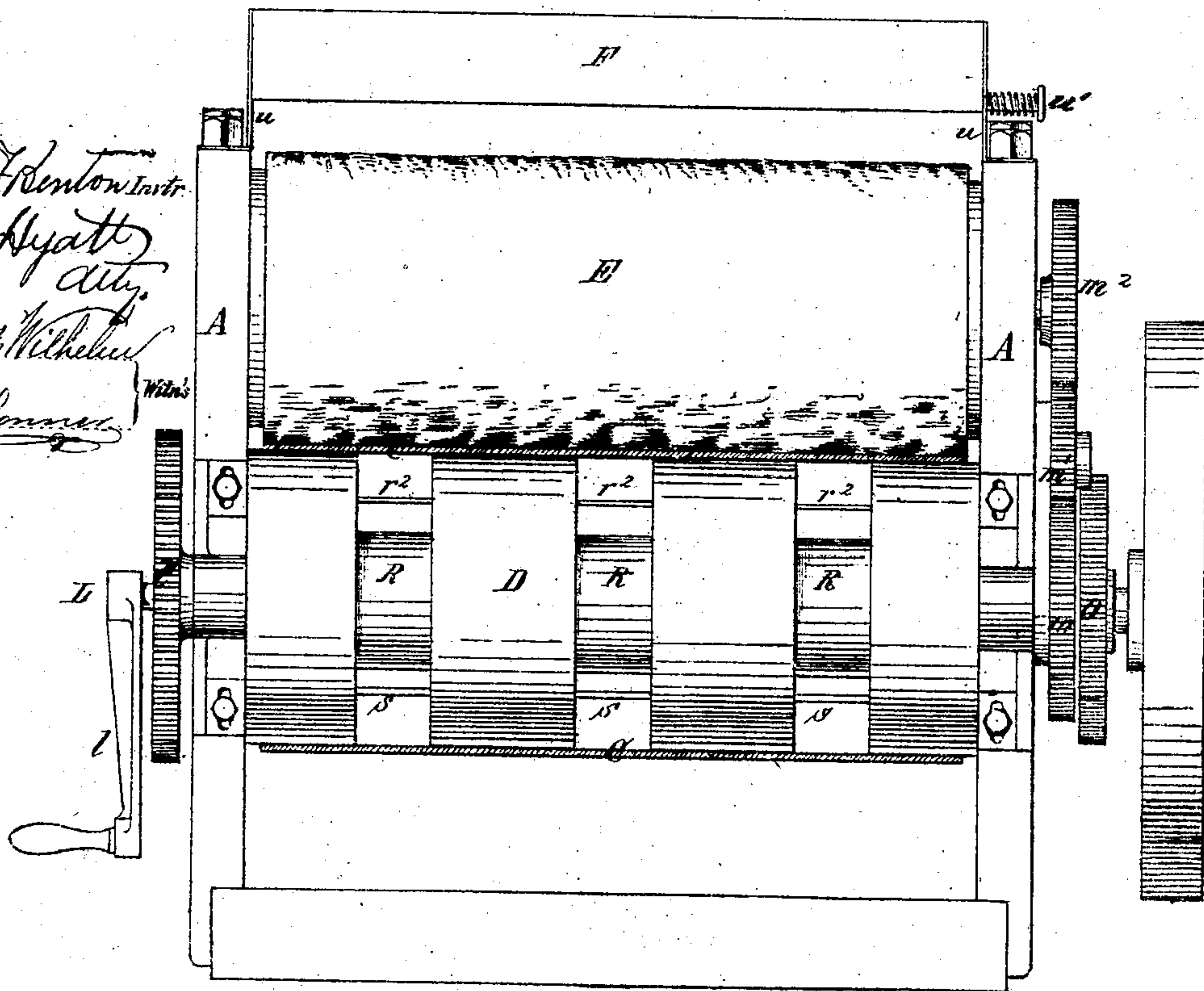


Fig. III.

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UNITED STATES PATENT OFFICE.

EDWARD F. BENTON, OF BUFFALO, NEW YORK.

IMPROVEMENT IN BRONZING-MACHINES.

Specification forming part of Letters Patent No. 116,918, dated July 11, 1871.

To all whom it may concern:

Be it known that I, EDWARD F. BENTON, of the city of Buffalo, in the county of Erie and State of New York, have invented certain Improvements in Bronzing-Machines, of which the following is a specification:

My improvements relate to that class of machines by which powdered bronze or other analogous material is applied to freshly-printed surfaces of paper or other materials; and the invention consists: 1st, in combining with the endless belt or carrier spring-grippers, so arranged as to clamp the paper as it is fed thereon and hold it in place until it is passed under the bronzing and polishing-rollers, when it is released and discharged therefrom, as hereinafter fully described. 2d, in the arrangement, with stop-bars and grippers of the endless belt or carrier, of grooves encircling the rollers of the latter, which furnish a space into which the grippers project as they are carried around the rollers with the endless belt.

In the accompanying drawing, Figure I is a longitudinal elevation of a bronze-machine provided with my improvements. Fig. II is a sectional elevation thereof. Fig. III is a front elevation of the machine with the feeding-table removed. Fig. IV is a detached plan view, and Fig. V a sectional elevation of one of the grippers. Fig. VI is a detached view of the bearing to which each gripper is pivoted. Fig. VII is a plan view of the stop-bar which opens the grippers preparatory to clamping the paper. Fig. VIII is a transverse section, and Fig. IX a longitudinal section, both on an enlarged scale, of the bronze-hopper.

Like letters designate like parts in each of the figures.

In Figs. I, II, III, A represents the frame of the machine; B, the feed-table. C is an endless belt or carrier revolving around horizontal rollers D D'. E is the bronzing-roller, arranged over the forward end of the endless carrier, covered with down or equivalent material for applying and distributing the bronze. F is a bronze-hopper arranged above the roller E. G is the polishing-roller, arranged over the rear end of the endless carrier and covered with plush or other suitable material, operating to polish the surface bronzed and remove the superfluous material. H is the reciprocating cleaning-brush, arranged at the rear of the roller G and in contact therewith, by

which the bronze adhering to the roller is brushed therefrom into a receptacle, *h*, at the rear end of the machine. L is the driving-shaft, rotated by a crank, *l*, or otherwise, and connected by gear-wheels *l'* with the roller D of the endless carrier. The latter is connected by a train of gear-wheels, *m m¹ m²*, with the bronzing-roller E. The roller D' of the endless carrier transmits motion to the polishing-roller G by means of a train of wheels, *n n¹ n²*. O is a gear-wheel mounted on the driving-shaft L and engaging with a pinion, *o*, to which latter is attached a crank, *o¹*, which, by means of a connecting-rod, *o²*, bell-crank *o³*, and link *o⁴*, imparts movement to the cleaning-brush H, which reciprocates in slotted guides *h'*.

The general arrangement of these parts I do not claim, as the same is old and well known.

In Figs. II, III, IV, V, and VI, P represents the grippers arranged in perforations in the endless carrier C. They consist of a flat piece of metal turning on a pivot, *p*, which is attached to a bearing, *p¹*, secured on the endless belt C. The ends *p² p³* of the gripper are bent at right angles to the main portion thereof. They are located on opposite sides of the endless carrier, the exterior end *p²* clamping the paper, while the interior end *p³* serves to open the gripper. Q is a spiral spring attached to the latter near the portion *p³*, passing through a guide-lug, *q*, and secured to the endless carrier at *q'*. R R' represent annular grooves provided in the rollers D D' so as to allow the grippers to pass around said rollers with the endless belt. *r* is a stop-bar arranged horizontally behind the roller D, near the upper portion of the endless belt, and attached, by screws or otherwise, to the frame A of the machine. *r¹* are arms attached to the stop-bar *r* and projecting forward into the grooves R of the roller D. They consist of two side bars fastened to the stop-bar and leaving a space between them for the passage of the gripper, and flat front-piece *r²* connecting said side bars so as to detain the grippers. S is a stop-bar, also arranged behind the roller D, but near the lower portion of the endless carrier. It consists of an angular strip of metal secured to the frame A, provided with notches S in which the grippers engage.

The operation of this part of my improvements is as follows: The grippers P traveling with the endless carrier first strike the front portions *r²* of the stop-bar *r*, whereby the end *p³* of the gripper

is arrested in its movement and the outer end p^2 opened for the reception of the paper. The end p^3 then rides on the front portion r^2 , thereby giving the operator time to feed in the paper until it reaches the open portion of the arm r^1 , when the grippers are closed by the action of the spring Q and the paper firmly clamped. The paper is then carried successively under the bronzing and polishing-rollers, and held by the grippers until the latter reach the stop-bar S, when they are opened in the manner represented in Fig. V, and the bronzed paper is released.

As represented in Figs. VIII and IX, the bottom T of the bronze-hopper is provided with perforations, through which the material is discharged. Above and sliding longitudinally in contact with this perforated bottom is the similarly-perforated slide-valve o, which closes the perforations in the bottom, except when the perforations of the slide and bottom are made to coincide. U is a rod projecting from one or both ends of the slide outside of the end support u of the hopper, provided with a stop, V, within, and terminating in a knob, u^1 . On this rod or shank, between the knob and the standard-bearer, is

placed, slightly compressed, a spiral spring, u^2 , which holds the perforated slide, properly adjusted for the purpose, in a position to close the perforations in the bottom of the hopper. When the bronzing material is required to be supplied to the roller E the knob u^1 is pressed inward, which adjusts the slide so as to bring its perforations in coincidence with those of the bottom T, when the material is permitted to discharge. On releasing the knob u^1 the reaction of the spring u^2 returns the slide to its first position, again closing the discharge-apertures.

I claim as my invention—

1. The combination, with the endless belt or carrier of a bronzing-machine, of spring-grippers attached to the belt for clamping and holding the sheets of paper thereon, substantially as hereinbefore set forth.

2. The grippers P, stop-bars $r^1 r^2$, and grooves R R' in the rollers D D', arranged and operating substantially as set forth.

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Witnesses:

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