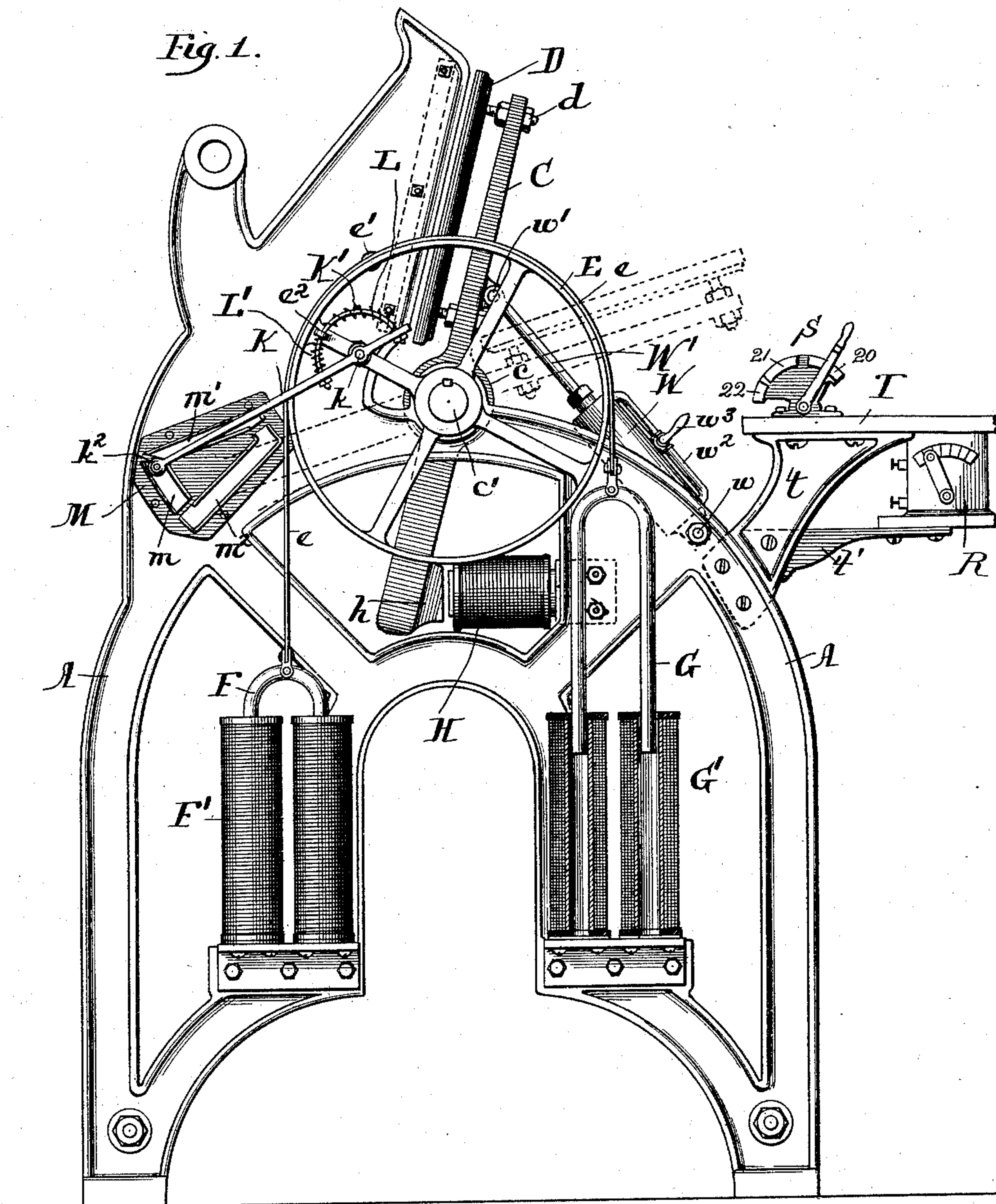


E. H. KORSMEYER.
ELECTRO MAGNETIC MECHANISM FOR OPERATING PRINTING PRESSES.
No. 483,564. Patented Oct 4, 1892.



Witnesses:

Fred Gerlach

Ida B. Carpenter

Inventor:

E. H. Korsmeyer

*By Bruce Fisher
Attorneys.*

E. H. KORSMEYER.
ELECTRO MAGNETIC MECHANISM FOR OPERATING PRINTING PRESSES.

No. 483,564.

Patented Oct. 4, 1892.

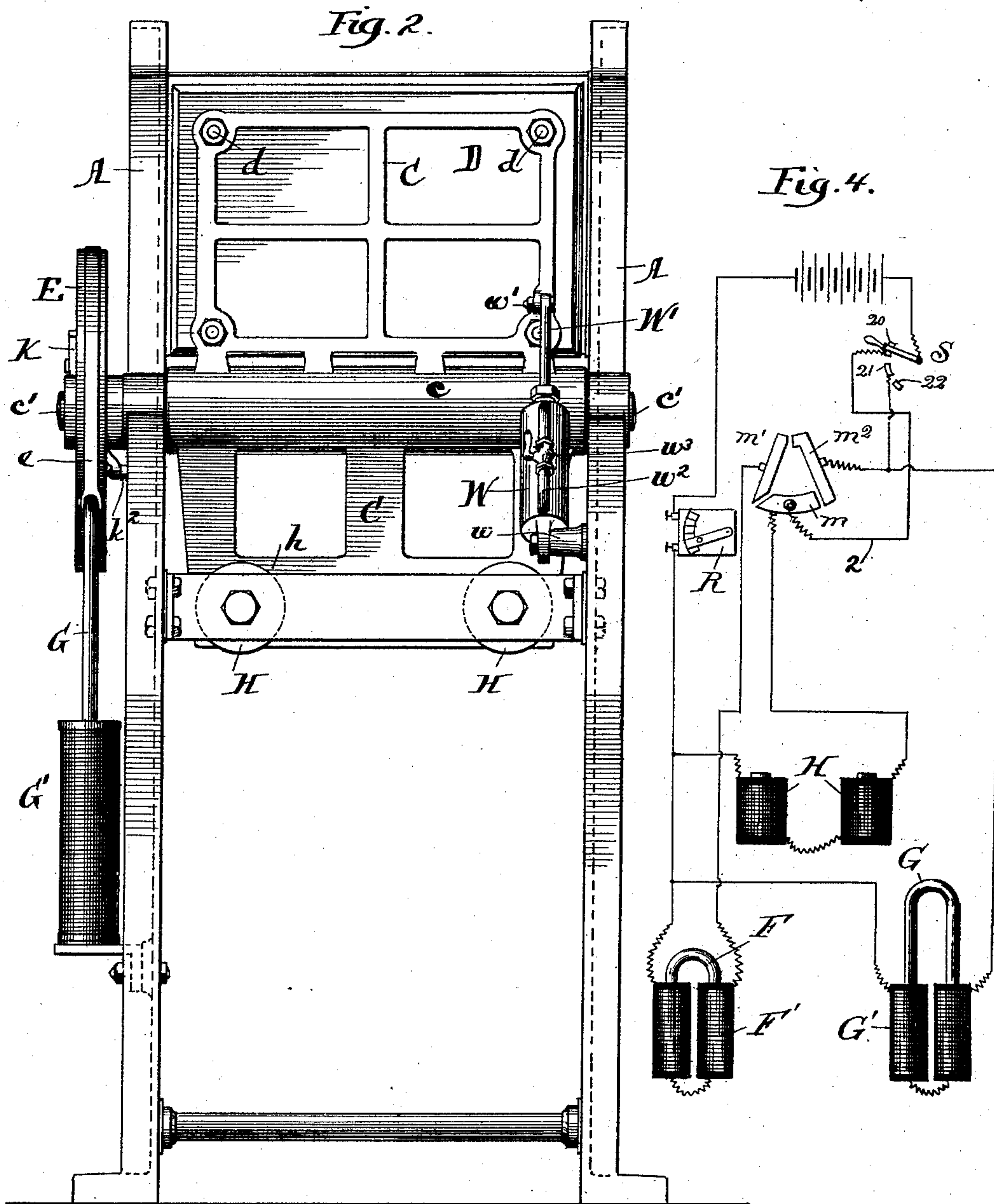
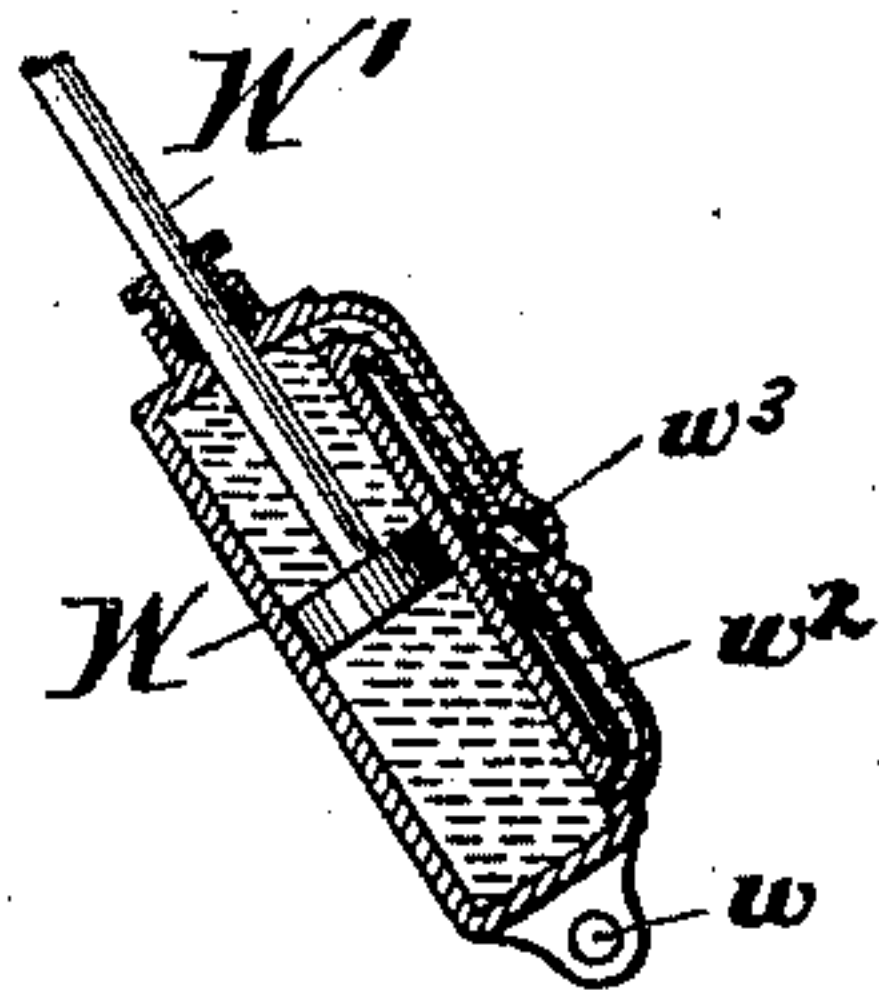


Fig. 3.



Witnesses:

Fred Gerlach

Ida B. Carpenter

Inventor:

E. H. Korsmeyer

By *Price & Fisher*
Attorneys.

UNITED STATES PATENT OFFICE.

ERNST H. KORSMEYER, OF KANSAS CITY, MISSOURI.

ELECTRO-MAGNETIC MECHANISM FOR OPERATING PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 483,564, dated October 4, 1892.

Application filed September 5, 1891. Serial No. 404,827. (No model.)

To all whom it may concern:

Be it known that I, ERNST H. KORSMEYER, a resident of Kansas City, in the State of Missouri, have invented certain new and useful
5 Improvements in Electro-Magnetic Mechanism for Operating Printing-Presses and for other Purposes, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.
10

My present invention has, primarily, for its object to provide electro-magnetic mechanism for operating printing-presses, and more
15 particularly job-printing presses, although the invention will be found applicable in part to a variety of other uses.

With this object in view my invention consists in the novel features of construction
20 hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in side elevation of a job-printing press embodying my invention. Fig.
25 2 is a view in front elevation. Fig. 3 is a detail view in horizontal section through the dash-pot or cylinder for controlling the movement of the parts. Fig. 4 is a diagrammatic
30 view of the various magnets and their circuit connections.

A designates the frame of a printing-press, which may be of any usual or suitable construction. This frame is provided at its upper
35 portion with a bed of usual construction to receive the type-form, and the frame will also be furnished with the usual inking-roller mechanism, which, however, forms no part of my present invention and is not therefore
40 illustrated.

In the upper part of the frame A of the machine is journaled a pendulum-frame C, this frame being preferably formed with a hub *c*, fixed upon a shaft *c'*, that is journaled in the
45 sides of the main frame A of the machine. The upper portion of the pendulum-frame C carries the platen D, the position of the platen upon the upper part of the pendulum-frame being determined by regulating-screws
50 *d*. The platen D will be provided with the usual tympan as commonly employed in presses of this character.

In order to impart a vibratory movement to the platen D to bring the paper against the type-form, I employ the mechanism next to
55 be described, and it is in this mechanism that my present invention resides. Upon the outer end of the shaft *c'*, whereon the pendulum-frame C is journaled, is fixed the pulley E, and over the rim of this pulley passes the
60 strap or brass chain *e*, that is fixed to the rim of the pulley by means of the rivet *e'*. One end of this strap *e* has connected thereto the armature-core F of the solenoid-magnet F', and the opposite end of the strap *e* has con-
65 nected thereto the armature-core G of the solenoid-magnet G'. The pendulum-frame C is very nicely balanced, so that but very little force will be required to cause the frame to vi-
70 brate in order to move the platen D back and forth in such manner as to carry the paper to be printed to and from the type-form. Hence it will be seen that if the magnets F' and G' are alternately energized at proper times the
75 cores F and G of these magnets will be correspondingly attracted or sucked into their respective coils and the pulley E will be shifted so as to impart a vibratory movement to the platen D of the press. In order to ef-
80 fect the impression of the type when by the action of the magnet F' the platen D has been brought into proximity to the type-form, I provide the supplemental magnets H, (and which for convenience I term the "im-
85 pression-magnets,") these magnets being located in such position that when the pendulum-frame C has been swung so as to bring the platen D in proximity to the type-form the
90 lower portion *h* of the pendulum-frame C, which constitutes an armature for the magnet H, will be brought into proximity to this magnet, and at such time the magnet H will be energized and cause the armature *h* of the
95 pendulum-frame C to be attracted, and thereby forcibly move the platen D with the sheet to be printed against the type-form, so as to ef-
fect the impression. Preferably the armature *h* at the lower ends of the pendulum-frame C will be faced with leather or like ma-
100 terial, so as to cushion the contact of the armature with the magnet. As soon as the printing of the sheet has been thus effected the magnet H will be de-energized (by switch mechanism to be presently described) and

the solenoid-magnet G' will be energized, so as to impart a reverse movement to the pendulum-frame C necessary to swing backward the platen D and permit the printed sheet to be removed and a new blank sheet to be plated upon the tympan.

In order to effect the automatic energization and de-energization of the several magnets F' and G' and H , I prefer to employ the switch mechanism next to be described. Upon the pulley E is pivoted, as at k , a switch-arm K , and to the rear end of this arm are connected the ends of a semicircular rod K' , that passes through a lug e^2 upon one of the spokes of the pulley E . Upon the opposite sides of the lug e^2 and encircling the rod K' are the coiled springs L and L' , that bear upon the sides of the lug e^2 and upon the sides of the switch-arm K . The outer end of the switch-arm K carries a contact-roller k^2 , that is suitably connected with an electric wire 2 and adapted to travel over the contact-plates m , m' , and m^2 of the switchboard M . The contact-plates m , m' , and m^2 of the switchboard M will be connected with their respective magnets, so that when the switch-arm K bears upon the plate m it will complete the circuit through the corresponding magnet—that is to say, the contact-plate m is suitably connected with the impression-magnet H , the contact-plate m' is connected with the solenoid-magnet F' , and the contact-plate m^2 is connected with the solenoid-magnet G' , each of these magnets being in the battery-circuit, as will be readily understood.

The purpose of mounting the switch-arm K upon the pulley E in the manner shown and providing the springs L and L' is to effect the shifting of the switch-arm at the proper times, and it will be seen that when the pulley E has been moved by the solenoid F' so as to bring the platen D to a point adjacent the type-form the contact-roller k^2 at the end of the switch-arm K will pass from out the grooved contact-plate m' , and by means of the spring L' , which has been depressed during the movement of the pulley E , the free end of the switch-arm K will be forced upon and along the contact-plate m . As soon as the contact-roller of the switch-arm K leaves the contact-plate m' it will break the circuit in which the solenoid F' is interposed, and consequently this solenoid will be de-energized. As soon as the contact-roller k^2 passes onto the contact-plate m the circuit will be completed through this contact-plate and consequently through the impression-magnet H , and the armatures h at the lower end of the pendulum-frame C will be attracted by the impression-magnet and will cause a quick movement of the platen D necessary to effect the printing of the paper. This will occur while the spring L' is moving the contact-roller k^2 across the contact-plate m ; but as soon as the contact-roller k^2 passes from off the contact-plate m the circuit through the impression-plate will be broken

and the contact-roller k^2 will pass onto the contact-plate m^2 , thereby establishing the circuit through this contact-plate and through the solenoid G' , that is in circuit therewith. The solenoid G' will thus become energized and will attract its armature-core G , thereby causing this armature-core G to be sucked downward, so as to effect the backward movement of the pulley E and of the platen D to bring the platen to the position seen by dotted lines in Fig. 1. While the pulley E is making this reverse movement the contact-roller k^2 of the switch-arm K will pass along the grooved contact-plate m^2 until it reaches the upper portion thereof, when it will be shifted by the spring L onto the contact-plate m' , thereby breaking the circuit through the solenoid G' and establishing the circuit through the contact-plate m' and the solenoid F' . Hence it will be seen that the operation is automatic, it only being necessary for the attendant to place the fresh sheets of paper upon the tympan of the press and remove the printed sheets therefrom.

In order to regulate the force of the electric current and consequently the speed of the machine, I prefer to interpose in the main circuit a rheostat R , of any usual or suitable construction, and in order to enable the circuit to be broken completely when it is desired to stop the press I provide a switch S of familiar construction. Preferably the switch S is mounted upon a table T , connected by brackets t to the main frame of the machine, and the rheostat R may be mounted upon a table T' beneath the table T and extending transversely between the brackets t that sustain the table T .

In order to regulate the speed and stroke of the parts, I prefer to employ a brake or regulator consisting of a dash-pot or cylinder W , that may be filled with vaseline or other fluid, one end of the cylinder W being pivotally connected with the main frame by means of a rod w , on which the lower end of the cylinder W is pivoted, and the opposite end of this cylinder having a piston-rod W' extending therefrom and pivotally connected, as at w' , to the upper portion of the pendulum-frame C . The dash-pot or cylinder W is furnished with a pipe w^2 , that connects its opposite ends, this pipe being furnished with a cock w^3 to determine the flow of fluid from end to end of the cylinder. Hence it will be seen that the speed of the vibration of the pendulum-frame C can be determined by shifting the cock w^3 , so as to permit a more or less free passage of the fluid as the piston is moved within the dash-pot.

The preferred arrangement of the circuits between the several magnets, the switchboard M , the switchboard S , the rheostat R , and the battery or other source of electric energy appears from the view shown by diagram in Fig. 4 of the drawings. In bringing the machine to a standstill the lever at switch S is shifted from the contact 20 to the contact

21, thereby cutting out the circuit, which includes the arm K, and establishing a circuit through plate m^2 and solenoid G' , the effect of which is to draw the platen D back and away from the type-bed. The further shift of the switch-lever at S brings it to the dead-point 22, thus cutting out the circuit last described.

Obviously the details of structure may be varied according to the skill of the mechanic without departing from the spirit of the invention. Thus it is clear that a dynamo in lieu of the battery may be employed as a source of the electric impulses; also, that instead of the pulley or wheel E a lever can be substituted for connecting the armatures F and G with the shaft of the pendulum-frame. The invention is accordingly not restricted to the precise details herein set forth.

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

1. In a printing-press, the combination, with the type-bed and a movable platen, of a vibratory pendulum-frame whereby said platen is carried, said pendulum-frame extending at each side of the shaft whereon it is journaled to counterbalance the platen and insure its easy movement, armature-cores connected with said shaft for effecting the movement of said pendulum-frame and platen, and electro-magnets for attracting said armature-cores, substantially as described.

2. In a printing-press, the combination, with a type-bed and a movable platen, of a vibratory pendulum-frame whereby said platen is carried, said pendulum-frame extending below the shaft whereon it is journaled to counterbalance the platen and insure its easy movement, a pulley connected to the shaft of said pendulum-frame, and armature-cores connected to said pulley and electro-magnets for attracting said armature-cores, substantially as described.

3. In a printing-press, the combination, with a type-bed and a movable platen, of electro-magnets and armatures for effecting the main movement of said platen and a supplemental electro-magnet and armature suitably connected with said platen for effecting its final movement to produce the impression, substantially as described.

4. In apparatus of the class described, the combination, with the part to be operated—such, for example, as a platen—of a pulley E, a strap or chain connected to said pulley and passing over its periphery, armature-cores attached to the ends of said strap, magnets for attracting said armature-cores, and a balanced pendulum-frame connected with said pulley, whereby a uniform and easy movement of said platen or part to be operated is secured, substantially as described.

5. In apparatus of the class described, the combination, with the part to be operated—such, for example, as a platen—of a suitable pulley, a strap or the like connected to said pulley, armature-cores connected to said strap, electro-magnets for attracting said armature-cores, a balanced pendulum-frame connected to said pulley, an impression-magnet for attracting the pendulum-frame at the extreme end of its stroke, and suitable switch mechanism, substantially as described.

6. In apparatus of the class described, the combination, with the part to be operated—such, for example, as a platen—of a pulley, armature-cores connected to said pulley, magnets for said armature-cores, switch mechanism for controlling the alternate energization and de-energization of said magnets, said switch mechanism comprising a switch-rod connected with the pulley, and a switchboard provided with a series of contact-plates connected with their respective magnets, substantially as described.

7. In a printing-press, the combination, with a type-bed and a movable platen, of a pulley E or equivalent, straps e , connected to said pulley, armature-cores F and G, connected to said strap, magnets F' and G' , pendulum-frame C, connected to the shaft of said pulley E, an impression-magnet H and armature h , and an automatic switch mechanism comprising a spring-actuated switch-arm K and a switchboard provided with a series of contact-plates m , m' , and m^2 , substantially as described.

ERNST H. KORSMEYER.

Witnesses:

HENRY A. LOUIS,
WILLIAM F. DENIS.