

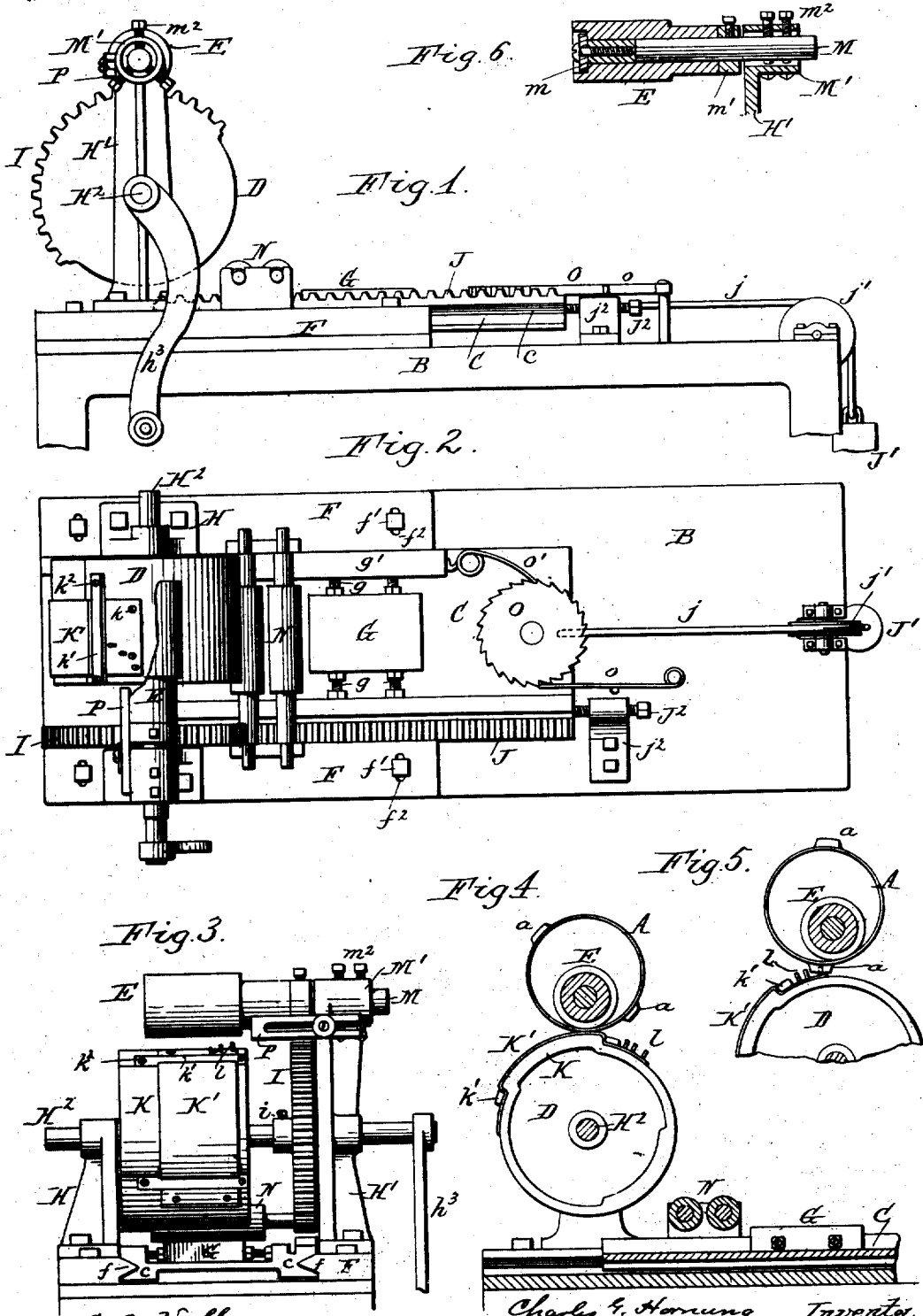
No. 689,189.

Patented Dec. 17, 1901.

C. G. HORNING.
PRINTING MACHINE.

(Application filed June 21, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

CHARLES G. HORNUNG, OF BUFFALO, NEW YORK.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 689,189, dated December 17, 1901.

Application filed June 21, 1901. Serial No. 65,414. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. HORNUNG, a citizen of the United States, and a resident of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Printing-Machines, of which the following is a specification.

This invention relates to a machine for printing on sheet-metal buckets or pails—such, for instance, as ordinary lard-buckets.

The object of the invention is the production of a simple and efficient machine adapted especially for printing on sheet-metal bucket or pail bodies and similar articles after the same have been formed or completed.

In the accompanying drawings, Figure 1 is a side elevation of a machine embodying the invention. Fig. 2 is a plan view of the machine shown in Fig. 1. Fig. 3 is a front elevational view. Fig. 4 is a sectional elevational view showing a bucket in position to be printed. Fig. 5 is a fragmentary sectional elevation showing the normal position of the transfer-cylinder and bucket or the position they occupy at the commencement of the operation. Fig. 6 is a detail sectional view of the impression-cylinder and adjusting means therefor.

Like letters of reference refer to like parts in the several figures.

Referring to the drawings, A indicates a bucket of well-known form which is provided near its rim at opposite sides with projecting bail-ears *a*, which are provided with holes for the engagement of the handle or bail. (Not shown.) The machine about to be described is designed for operation upon such buckets; but it will be understood that the machine is also adapted for operation upon other forms of buckets or tubular bodies.

B represents a main or supporting frame of suitable construction for the machine; C, a printing-bed mounted thereon to reciprocate horizontally; D, a transfer-cylinder journaled above the bed and adapted to receive the impression from a printing-form on the bed, and E an impression cylinder or platen mounted adjacent to the transfer-cylinder and between which and the transfer-cylinder the bucket to be printed is placed and held to receive the impression from the transfer-cylinder.

The printing-bed is mounted to slide in any preferred manner. It is shown as having grooves *c* in its longitudinal side edges, in which engage tracks *f* on the inner sides of horizontal guide strips or ways F, adjustably secured on the frame B by means of bolts *f'* passing through elongated slots *f*² in the guide-strips.

G indicates the printing-form or electroplate, which is securely clamped in position and adjustable on the bed by clamp-screws *g* engaging between the sides of the form and side flanges *g'* on the bed. Any other suitable clamping devices may be employed.

H H' indicate upright standards secured to the sides of the frame or to the guide-strips F, at or near the forward end of the frame, and *h* indicates bearings thereon for the transverse shaft H², on which the transfer-cylinder D is secured. The shaft H² is provided at one end with a crank *h*³, by means of which the shaft and transfer-cylinder are rotated.

I indicates a mutilated gear-wheel secured on the shaft H², between one end of the transfer-cylinder and the adjacent standard, and adapted to mesh with a toothed rack J, secured to or formed on the bed at one side thereof for the purpose of moving the bed forward. The gear-wheel I is preferably adjustable on the shaft, as by means of a set-screw *i*. The bed is returned to its normal position after the gear-wheel I has been rotated sufficiently far for its teeth to pass out of engagement with the toothed rack by suitable means—as, for instance, a weight J', suspended from one end of a rope *j* or the like, which passes over a pulley *j'* on the rear end of the frame and is secured at its other end to the rear end of the bed C.

J² represents a stop for limiting the return movement of the bed. The stop may be in the form of a screw adjustable toward and from the bed in an ear or lug *j*² on the frame.

The transfer-cylinder is provided with a raised peripheral portion K, over which the transfer-pad K' is stretched and secured by suitable means. The pad employed is of any suitable material, such as rubber, and a convenient manner of securing the same is that shown, consisting of screws *k*, which secure the ends of the pad to the cylinder, and

clamping and tightening strips k' , passing transversely across the ends of the pad at the ends of said raised peripheral portion K and secured to the cylinder at their ends by screws k^2 .

l indicates register-pins, three being shown, which project from the depressed portion of the cylinder near one end of the pad and are for the purpose of assisting in registering the bucket to be printed in a manner hereinafter described.

The impression cylinder or platen E is rotatably mounted on a stud-shaft M, projecting from the upper end of the standard H' over the transfer-cylinder. As will be seen from Fig. 6, the impression-cylinder is held from endwise movement on the shaft M by a washer or head m at one end and a collar m' , adjustably secured on the shaft at the other end of the cylinder. The shaft is adjustable axially and also toward and from the transfer-cylinder, for which purpose the shaft extends into an enlarged bearing-ring M' on the upper end of the standard H' and is engaged and securely held therein and adjustable by means of a plurality of radially-disposed set-screws m^2 .

N indicates inking-rollers mounted in rear of the transfer-cylinder in position to ink the printing-form as the latter passes with the bed beneath them, and O indicates the inking-disk, also secured to the bed. This latter is rotatable, as usual, to present different portions to the inking-rollers at each reciprocation of the bed. For this purpose I have shown a pawl o secured to the rear part of the frame B and adapted to engage ratchet-teeth formed on or secured to the inking-disk, and thereby turn the latter the distance of one or more teeth at each rearward movement of the bed.

o' is a holding-pawl secured to the bed and also engaging said ratchet-teeth.

P indicates an adjustable gage for the bucket, which is secured to the upper portion of the standard H' by a screw and projects therefrom in position to be engaged by the rim of the bucket when the latter is placed over the impression cylinder or platen.

In the use of the machine, supposing the parts to be in the normal position, (shown in Figs. 1, 2, 3, and 5,) the transfer-cylinder is rotated one complete revolution by means of the crank h^3 , during which time the bed is moved forward by the mutilated gear, the printing-form being thereby carried beneath the inking-rollers and inked, the impression made on the transfer-pad, and the ink replenished on the rollers by the inking-disk. The machine is now ready for the bucket A, the open end of which is placed over the impression-cylinder with its cylindrical wall between the same and the depressed portion of the transfer-cylinder and with one of the registering-pins engaging in the hole in the bail-ear a on the under side of the bucket (see Fig. 5) and the rim of the bucket against the

adjustable gage P. By turning the crank the raised portion of the transfer-cylinder will press the bucket against the platen, and the bucket and cylinder turning in unison the matter printed on the pad will be transferred from the latter to the bucket. After the raised portion of the transfer-cylinder passes beyond the impression-cylinder the bucket with the matter printed thereon can be disengaged from the register-pin and removed from the impression cylinder or platen. The plurality of register-pins enables the registering of different sizes of buckets, in which the bail-ears are arranged at different distances from the rims.

I claim as my invention—

1. The combination with an impression cylinder or platen, on which a bucket or the like is adapted to be placed, of a transfer-cylinder having a transfer-pad on the periphery thereof raised above the peripheral portions of the transfer-cylinder at each side circumferentially of said pad, and a printing-form from which the transfer-pad receives the impression, substantially as set forth.

2. The combination with an impression-cylinder, of a transfer-cylinder between which and the impression-cylinder a bucket or the like is adapted to be placed, and a register device carried by the transfer-cylinder, substantially as set forth.

3. The combination with an impression-cylinder on which a bucket or the like is adapted to be placed, of a transfer-cylinder, a register device carried by the transfer-cylinder, and a gage for the bucket or the like, substantially as set forth.

4. The combination with an impression-cylinder, of a transfer-cylinder having a raised portion and a depressed portion, a transfer-pad on said raised portion, and a register-pin on said depressed portion, substantially as set forth.

5. The combination of a reciprocating bed provided with a printing-form, a transfer-cylinder provided with a transfer-pad, means for actuating one of said parts, operative connections whereby the other of said parts is operated from the actuated part, and an impression-cylinder adjacent to said transfer-cylinder over which a bucket or the like is adapted to be placed, substantially as set forth.

6. The combination of a reciprocating bed provided with a printing-form, a transfer-cylinder provided with a transfer-pad, means for rotating said transfer-cylinder, operative connections between said transfer-cylinder and said reciprocating bed whereby the latter is reciprocated to deliver the impression from the form to said transfer-pad, and an impression-cylinder adjacent to said transfer-cylinder, substantially as set forth.

7. The combination with a reciprocating bed provided with a toothed rack, of a rotatable transfer-cylinder, a mutilated gear-wheel rotatable with said transfer-cylinder and

adapted to mesh with said toothed rack to move the bed in one direction, means for returning the bed, and an impression-cylinder adjacent to the transfer-cylinder, substantially as set forth.

8. The combination of a frame, a horizontal reciprocating bed, a toothed rack attached thereto, standards rising from said frame at opposite sides of said bed, a shaft journaled in said standards, a transfer-cylinder secured to said shaft between said standards, means for rotating said shaft, a mutilated gear-wheel

secured to said shaft and adapted to mesh with said toothed rack to move the bed in one direction, means for returning said bed, and an impression-cylinder mounted on one of said standards and extending adjacent to said transfer-cylinder, substantially as set forth.

Witness my hand this 11th day of June, 1901.

CHAS. G. HORNUNG.

Witnesses:

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CLAUDIA M. BENTLEY.