

(No Model.)

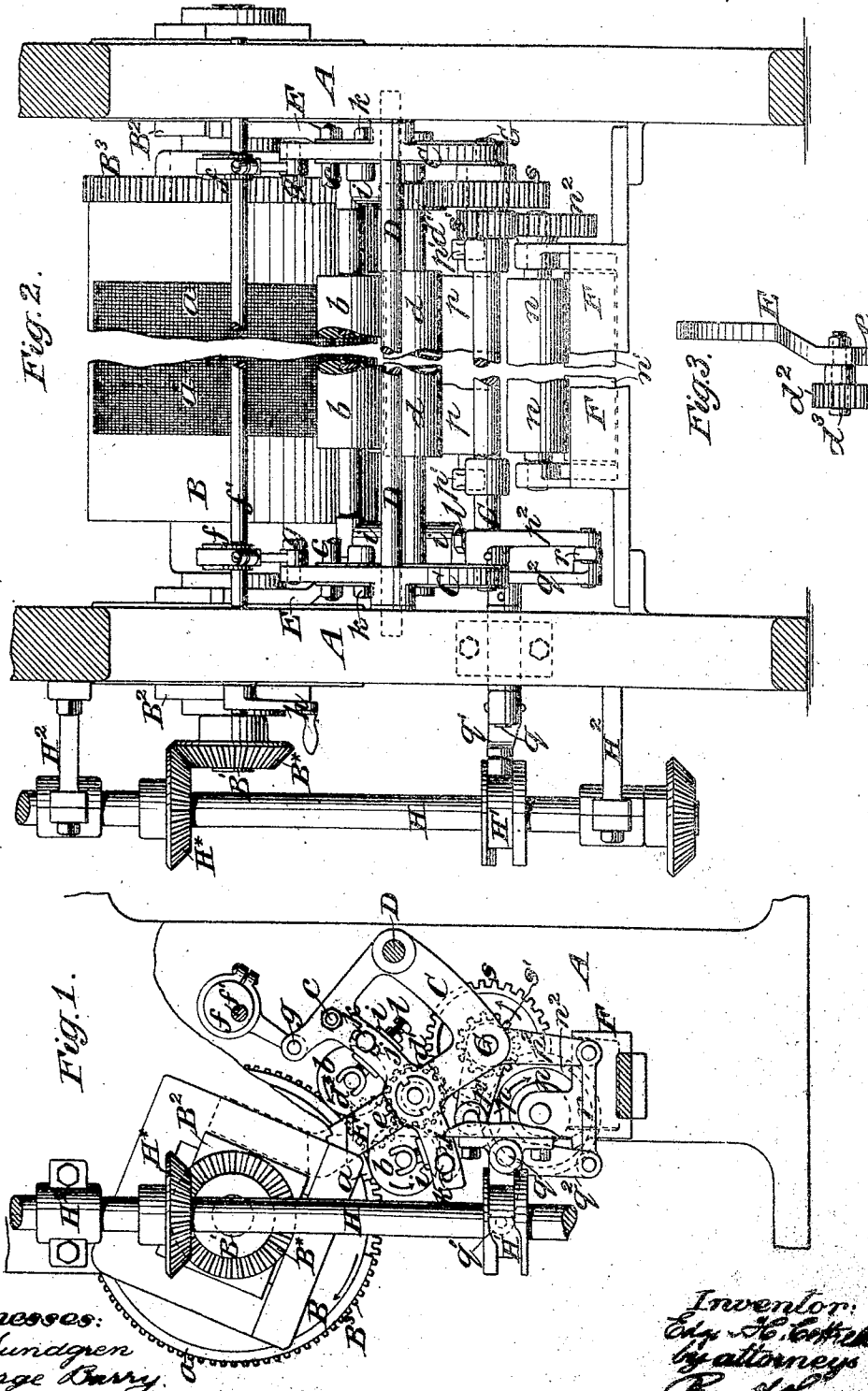
2 Sheets—Sheet 1.

E. H. COTTRELL.

APPARATUS FOR CLEANING THE FORMS OF ROTARY PRINTING MACHINES.

No. 511,934.

Patented Jan. 2, 1894.



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UNITED STATES PATENT OFFICE.

EDGAR H. COTTRELL, OF STONINGTON, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE C. B. COTTRELL & SONS COMPANY, OF SAME PLACE, AND JERSEY CITY, NEW JERSEY.

APPARATUS FOR CLEANING THE FORMS OF ROTARY PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 511,984, dated January 2, 1894.

Application filed February 3, 1893. Serial No. 460,852. (No model.)

To all whom it may concern:

Be it known that I, EDGAR H. COTTRELL, of Stonington, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Apparatus for Cleaning the Forms of Rotary Printing-Machines, of which the following is a specification.

This invention relates to that class of rotary printing machines in which the forms or printing plates are on cylinders.

The improvement may be applied to any machine of that class in which there is room for it to work independently of the inking rollers but is particularly applicable to perfecting machines and with especial advantage to the second form or plate cylinders of those machines the plates or forms of which are most liable to become quickly filled up with fluff from the web of paper. Its object is to remove from the form or forms on the cylinder after each impression all or the greater portion of the ink which remains on it or them and in which there is liable to be more or less of the fluff, thus leaving the form or forms perfectly clean to take a fresh supply of clean ink from the inking rollers.

To enable my invention to be understood by those skilled in the art I will proceed to describe it with reference to the accompanying drawings which show its application to the second form cylinder of a perfecting machine of the kind illustrated in C. B. Cottrell's Letters Patent No. 472,666, dated April 12, 1892.

Figure 1 represents a side view of my form cleaning apparatus and as much of the printing machine as is necessary to illustrate the construction and operation of said apparatus. Fig. 2 is a front view corresponding with Fig. 1. Fig. 3 represents detached one of the details of the apparatus which will be hereinafter explained. Fig. 4 is a vertical sectional view of the apparatus parallel with Fig. 1. Fig. 5 represents in section a modification of the apparatus.

Similar letters of reference designate corresponding parts in all the figures.

A is the main or side framing of the machine.

B is the second form or plate cylinder having its shaft B' working in suitable boxes B² in the framing A. *aa* are the forms or plates on said cylinder.

CCc is a frame consisting of two side plates CC and a transverse connecting bar c and carrying the rollers *bbd* which constitute the principal elements of my cleaning apparatus, the said frame being so hinged on a shaft D which has its bearings in the side framing A, that the rollers *bb* may be brought into a position for the form or forms on the cylinder to run, after every impression, in contact with said rollers as shown in Figs. 1, 4 and 5, or that the said rollers may be dropped a short distance out of the way of the cylinder.

Fixed stops E are provided on the main framing A to stop the frame CCc in the position above mentioned, the contact between such stops and said frame being indicated by the short line *e* in Fig. 1. One of these stops E is shown detached in Fig. 3 which is a front view. To effect the movement of the said frame CCc and rollers *bbd* to and from this position I have shown the said frame connected at *gg* with two eccentrics *ff* on a shaft *f'* which has its bearings in the sides of the main framing and which is furnished at one end with a hand crank *h* (Fig. 2).

The roller *d* is of some hard material as metal, but the rollers *bb* or their surfaces at least may be of some soft material that will take up the ink and fluff or dirt from the form or forms on the cylinder and give it to the metal roller *d*. This material may be the ordinary so called "composition" commonly employed for inking rollers. The roller *d*, which is to transfer the foul ink from the rollers to some appliance or means for taking it away, is of some hard material which will not be injured by such appliance, as for instance a scraper, which could not be used on the soft or composition rollers. The said roller *d* is represented as having its bearings fixed in the frame CCc, but the bearing stands *ii* of the rollers *bb* are represented as adjustable toward and from each other on the said frame and as adjustable toward and from the form cylinder B for the purpose of bringing the said rollers *bb* in proper relation to

the said roller d and to the form or forms on the cylinder, the first mentioned adjustment being permitted and secured by slots $j j$ in the plates $C C$ and set screws $k k$ in said slots
 5 by means of screws $l l$, these means of adjustment being such as are common to inking rollers. The metal roller d is furnished with a gear d' for the purpose of driving it from
 10 the gear B^3 on the cylinder B , through an intermediate loose gear d^2 on a fixed stud d^3 secured in one of the stops E , the said gear d^2 being always in gear with the cylinder. The composition rollers $b b$ are intended to be ro-
 15 tated by contact with the metal roller d or with the forms on the cylinder, the said roller d having the same surface velocity as the forms.

In the example of the invention represented in Figs. 1, 2, and 4, a ductor roller p having a composition surface is shown operating in connection with the metal roller d to take the foul ink therefrom and transfer it to a second metal roller n which is arranged in
 25 stationary bearings on the sides of a fixed receiving box F to one side of which there is attached an adjustable scraper n' for the purpose of constantly scraping the foul ink from said roller n , the so scraped ink being collected
 30 in the said box. The ductor rock-shaft G , the arms $p' p'$ of which carry the ductor roller p , is represented as receiving the necessary oscillating motion from a cam H' on an upright shaft H which works in
 35 bearings in brackets H^2 outside of the main framing and which derives rotary motion through bevel gears H^* and B^* one on the said shaft and the other on the cylinder shaft B^1 . The cam H' acts on the ductor shaft G
 40 through a short rock-shaft q which works in a bearing on one of the side frames A , one arm q' of the said rock-shaft engaging with the said cam and the other q^2 being connected by a short rod or link r with an arm
 45 p^2 of the ductor shaft G .

The metal roller n is represented in Figs. 1, 2 and 4, as driven at a much slower speed than the metal roller d , the driving being effected by the spur gear d' on the latter roller,
 50 two gears $s s'$ fast together but loose on the ductor shaft G and a gear n^2 on the said roller n , the gear s being larger than and gearing with d' , and the gear s' being smaller than s and gearing with the larger gear n^2 on the
 55 roller n .

The object of transferring the foul ink by a ductor from the roller d , moving at the same surface velocity with the form, to a slower moving metal roller n is that the scraper
 60 works better with the slower moving roller. In some cases however, the means of taking away the foul ink may consist, as illustrated in Fig. 5, of a scraper n' applied directly to the roller d , and in such case the box F and the scraper n' may be attached to the frame
 65 $C C c$.

I have not thought it necessary to repre-

sent any more of the inking apparatus than the form rollers 10, 10 which give the ink directly to the form or forms but will simply
 70 state that the said apparatus may be so arranged on the opposite side of the cylinder to the cleaning apparatus above described and so organized as to be conveniently thrown out of reach of the forms on the cylinder when it
 75 is desired to make up or manipulate the forms, for instance as illustrated in Letters Patent of C. B. Cottrell, No. 472,666, dated April 12, 1892.

It will be understood that the cleaning apparatus is entirely independent of the inking
 80 apparatus and that when at any time it is not desired to use the cleaning apparatus the frame $C C c$ with the rollers $b b d$ may be dropped on the shaft or hinge D to a position
 85 in which the rollers $b b$ will be clear of the forms in the rotation of the latter, but at all other times the frame $C C c$ with its contained rollers is brought to and secured in the position shown in the drawings in which the com-
 90 position rollers $b b$ will run in contact with the forms and the metal roller d , and that n also, if the latter be used, are in gear with the cylinder. Then when the printing machine is in operation the rollers $b b$ will take the
 95 foul ink from the forms after every impression and transfer it to the metal roller d whence it may be taken directly by the scraper or be taken by the ductor to be again transferred to the roller n to be taken from
 100 the latter by the scraper.

While it is preferable to use two soft surfaced cleaning rollers $b b$ it is obvious that a single roller of the same kind might be used to take the ink from a rotary form and transfer
 105 it to a metal or hard surfaced roller d from which it may be scraped.

What I claim as my invention is—

1. In combination with the form cylinder of a printing machine, an inking apparatus for
 110 applying clean ink to the form or forms on said cylinder, a soft-surfaced cleaning roller independent of said inking apparatus for taking foul ink from said form or forms, a
 115 hard-surfaced roller for receiving the foul ink from said soft-surfaced roller, and means for taking the foul ink from the said hard-surfaced roller, all substantially as herein set forth.

2. The combination with the form cylinder
 120 of a printing machine, of a soft-surfaced roller for running in contact with and taking ink from the form or forms on said cylinder, a hard-surfaced roller for running in contact with and taking ink from said soft-surfaced
 125 roller, a second hard-surfaced roller having a less surface velocity than the first mentioned hard-surfaced roller, a ductor between said first and second hard-surfaced rollers to transfer ink from the first to the second and a
 130 scraper for scraping the second, substantially as herein set forth.

3. The combination with the form cylinder of a printing machine, of a roller frame mov-

able toward and from said cylinder, a soft-surfaced roller in said frame for taking ink from a form or forms in the cylinder, a hard-surfaced roller in said frame for receiving ink from said soft-surfaced roller, a second hard-surfaced roller and fixed bearings therefor, a scraper for said second roller and a ductor in said movable roller frame arranged to oscillate between said two hard-surfaced rollers, substantially as herein set forth.

4. The combination with the form cylinder of a printing machine, of a roller frame movable toward and from said cylinder, one or more soft-surfaced rollers b b in said frame for taking ink from the cylinder, a hard surfaced roller d in said frame for receiving ink from said soft-surfaced roller, a gear d' on said roller d , an intermediate gear d^2 always

in gear with the cylinder between said gear d' and the cylinder, a hard-surfaced roller n 20 and fixed bearings therefor, a gear n^2 on said roller n , a scraper n' for said roller n , a rock shaft G and bearings therefor in said frame, a ductor roller p carried by said rockshaft and oscillating between the said rollers d n , 25 a larger gear s and a smaller gear s' fast together but loose on said rockshaft the said larger gear s gearing with d' and the said smaller gear s' gearing with said gear n , all substantially as and for the purpose herein 30 set forth.

EDGAR H. COTTRELL.

Witnesses:

FREDK. HAYNES,
LIDA M. EGBERT.