

(No Model.)

G. DUNCAN & J. SALMON.

APPARATUS FOR FINISHING PRINTED SHEETS OF PAPER.

No. 445,938.

Patented Feb. 3, 1891.

Fig. 1.

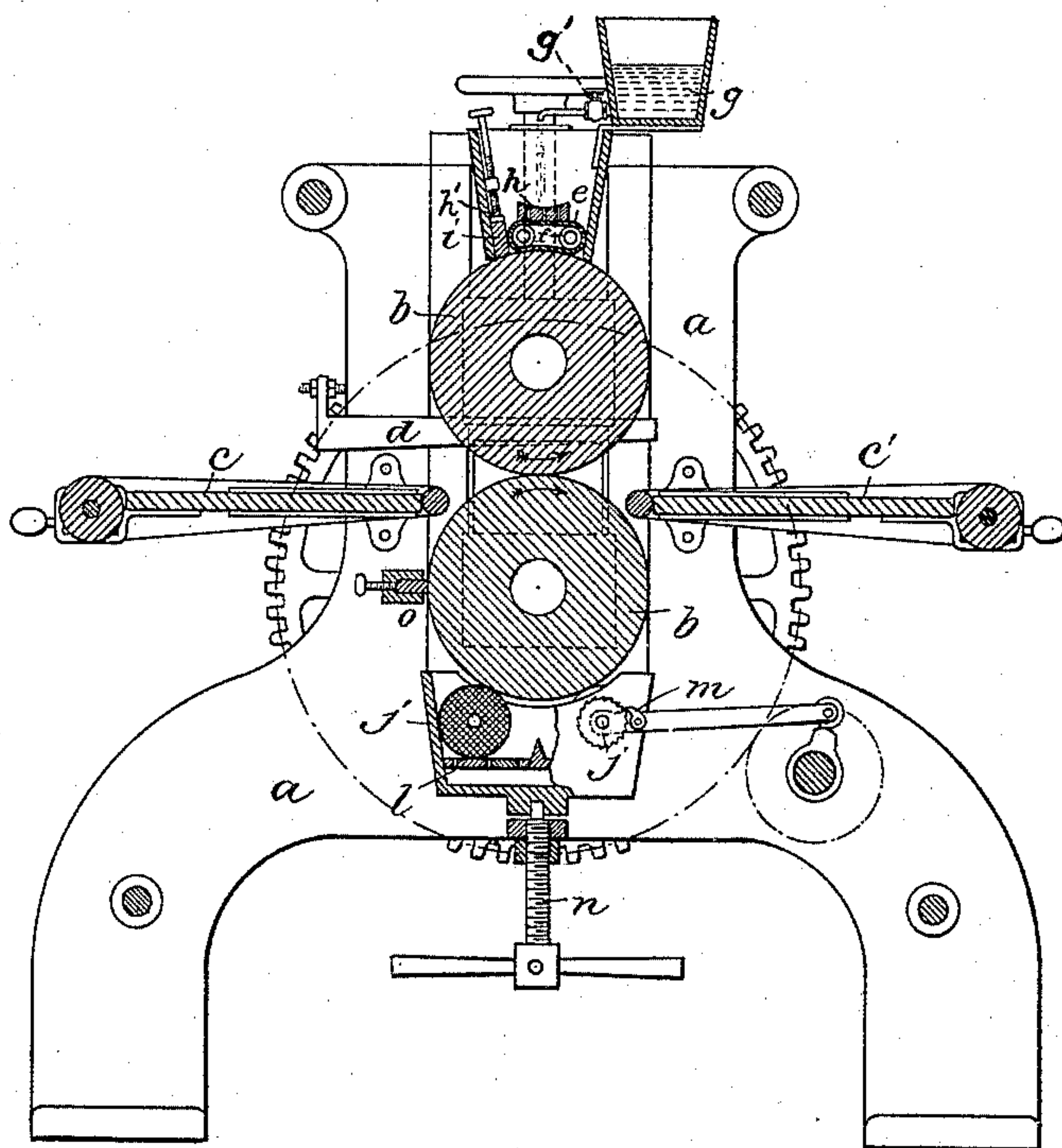
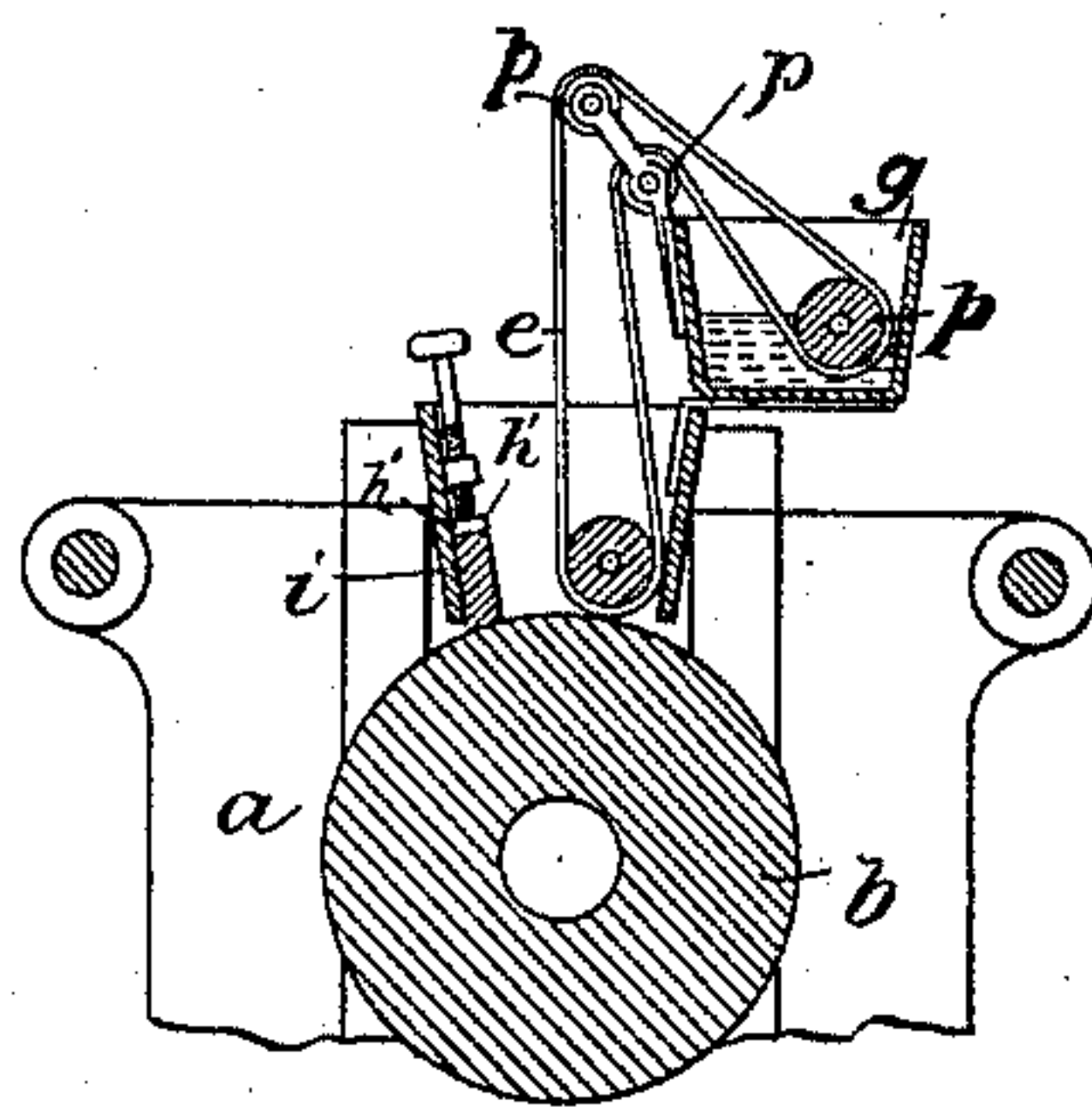


Fig. 2.



WITNESSES

S. M. Corwin
H. L. Gill.

INVENTOR

George Duncan
James Salmon
by W. Rossell & Sons
their Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE DUNCAN, OF LIVERPOOL, AND JAMES SALMON, OF MANCHESTER,
ENGLAND.

APPARATUS FOR FINISHING PRINTED SHEETS OF PAPER.

SPECIFICATION forming part of Letters Patent No. 445,938, dated February 3, 1891.

Application filed December 10, 1889. Serial No. 333,300. (No model.) Patented in England July 6, 1888, No. 9,831; in France March 13, 1889, No. 196,679; in Belgium March 14, 1889, No. 85,384, and in Germany March 19, 1889, No. 50,672.

To all whom it may concern:

Be it known that we, GEORGE DUNCAN, engineer, of the city of Liverpool, in the county of Lancaster, England, and JAMES SALMON, engineer, of the city of Manchester, in the county of Lancaster, England, have invented a new and useful Improvement in Apparatus for Finishing Printed Sheets of Paper; (that the same has not been patented to us in any country excepting Great Britain, No. 9,831, dated July 6, 1888; France, No. 196,679, dated March 13, 1889; Belgium, No. 85,384, dated March 14, 1889, and Germany, No. 50,672, dated March 19, 1889;) and we do hereby declare the following to be a full, clear, and exact description thereof.

The invention relates to apparatus in which printed sheets of paper are passed between heated smooth rolls so that surplus moist or undried ink is removed from the said sheets of paper and set off onto the rolls. The ink set off on the rolls has hitherto been removed and the rolls have been cleaned either by means of dry powdery substances or solutions or liquids in conjunction with brushes, pads, or rubbers. When dry powdery substances have been used, it has not been found practicable to thoroughly clean the rolls and the work done was consequently defective. Such dry-cleaning had, however, the advantage that the rolls could be placed one above the other, whereby the sheets of paper were easily fed to and removed from the said rolls. When solutions or liquids were employed, the rolls were efficiently cleaned and good work was done; but owing to difficulties not hitherto overcome in applying solutions or liquids to the upper roll of a pair of vertical rolls the said rolls have usually been placed horizontally side by side, or nearly so, and the sheets of paper have had to be fed and removed vertically. This has been done only with much trouble, and many sheets have been spoiled through imperfect feed and delivery.

Now the object of our invention is to provide a machine having the advantages of both systems of cleaning—that is to say, the rolls may be placed one above the other, as in dry-cleaning and the sheets of paper fed

and delivered horizontally, while at the same time the upper roll or both rolls are cleaned by means of solutions or liquids.

In the accompanying drawings, Figure 1 is a transverse section of apparatus constructed in accordance with our invention. Fig. 2 is a transverse section of a modification of apparatus for cleaning the top roll.

a is a frame.

b are smooth metal rolls carried in bearings in the frame *a*. The rolls are made hollow, are heated by steam, heated gases, or products of combustion and are geared together and caused to rotate in any usual manner.

c is a table from which the printed sheets are fed to the rolls.

c' is a table on which the sheets of paper are received after they have passed between the rolls.

d is a wedge for raising the upper bearings so as to adjust the distance of the rolls.

The above parts are of any usual construction.

e is a blanket carried by rollers *f*.

g is a trough containing cleaning-liquid—such as petroleum or an alkaline solution; *g'*, nozzles and taps for allowing the cleaning solution to drop from the trough *g* onto a perforated block *h* above the blanket *e*. The liquid is distributed over the blanket *e* by the perforations in the block, and the said blanket is sufficiently damped to wipe off the ink set off on the top roll.

i is a wiper of india-rubber or elastic substance which is pressed against the top roll by a spring *h'*, so as to prevent superfluous moisture from flowing down the roll onto the paper. The heat of the roller dries up the normal moisture before it reaches the paper.

When the blanket becomes dirty, a fresh piece is substituted therefor. If motion is given to the blanket, fresh surfaces would constantly be brought into contact with the roll and greater efficiency obtained.

To clean the bottom roll we make use of shafts *j*, clothed with porous material, such as felt, so as to form a soft roller, and so arranged as to be in contact with the bottom

roll and dip into cleaning-liquid in a trough *l*. Motion is given to the shaft *j* by means of ratchet and tappet gear *m*.

n is a screw for raising and lowering the trough *l* and rollers *j*.

o is a wiper similar to *i*.

Any convenient intermittent or continuous driving-gear may be used for the soft rollers; or driving-gear may be dispensed with.

When no driving-gear is used, the rollers *j* act simply as pads and may be of other suitable shape.

In Fig. 2 the endless blanket *e* is carried over rollers *p* into a trough *g*, where it becomes saturated with the liquid instead of there being taps and nozzles *g'*, from which the liquid drops on the blanket. Motion is given to the blanket by ratchet or suitable gear.

We claim—

1. In apparatus for finishing printed sheets of paper, the combination, with the upper of two finishing-rolls which are arranged one above the other, of a blanket arranged in contact with said roll, a reservoir for supplying a cleansing-liquid to said blanket, and a wiper arranged to press against said upper roll to prevent superfluous moisture from flowing down the roll, substantially as specified.

2. In apparatus for finishing printed sheets of paper, the combination, with the upper of two finishing-rolls which are arranged one above the other, of an endless blanket arranged in contact with said upper roll, rollers for carrying said endless blanket, a per-

forated block or liquid-distributor arranged over the blanket, and a reservoir provided with a drip-nozzle and arranged to deliver liquid on said perforated block or distributor, substantially as and for the purposes specified.

3. In apparatus for finishing printed sheets of paper, the combination of two finishing-rolls arranged one above the other, a blanket for applying a cleansing-liquid to the upper roll, a reservoir for supplying the blanket, a wiper arranged to press against said upper roll to prevent superfluous moisture from flowing down the roll, a reservoir arranged beneath the lower finishing-roll, and a roller of porous material arranged in the last-named reservoir and in contact with the lower finishing-roll, substantially as and for the purposes specified.

In testimony whereof I, the said GEORGE DUNCAN, have hereunto set my hand this 6th day of November, 1889.

GEORGE DUNCAN.

Witnesses to the signature of George Duncan:

JAMES JOHNSON,

JOHN RICHMAN.

In testimony whereof I, the said JAMES SALMON, have hereunto set my hand this 19th day of November, 1889.

JAMES SALMON.

Witnesses to the signature of James Salmon:

HERBERT I. VALURNE,

ISABEL M. SALMON.