(No Model.) 2 Sheets—Sheet 1.

W. HADFIELD, J. J. SUMNER & H. HADFIELD.

APPARATUS FOR WASHING PRINTERS' BLANKETS.

No. 540,735. Patented June 11, 1895.

FIG. 1.

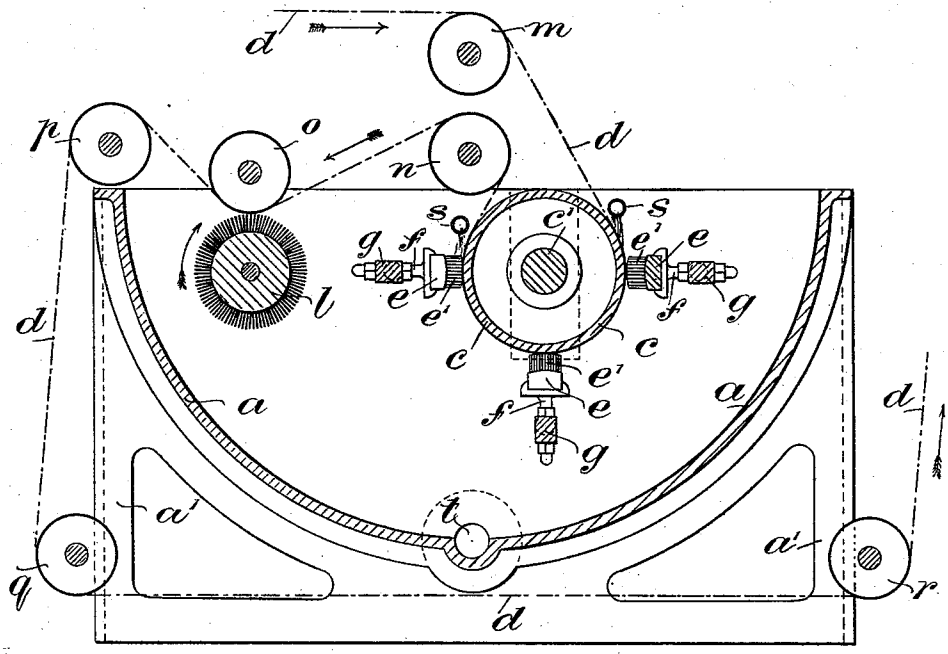
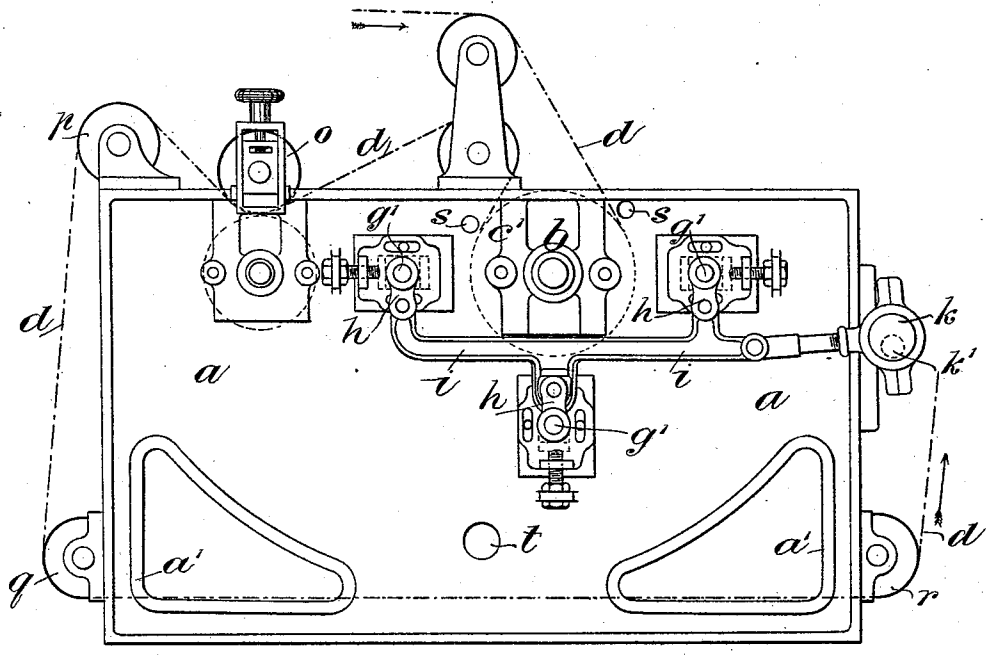


FIG. 2.



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(No Model.) 2 Sheets—Sheet 2.

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FIG. 3

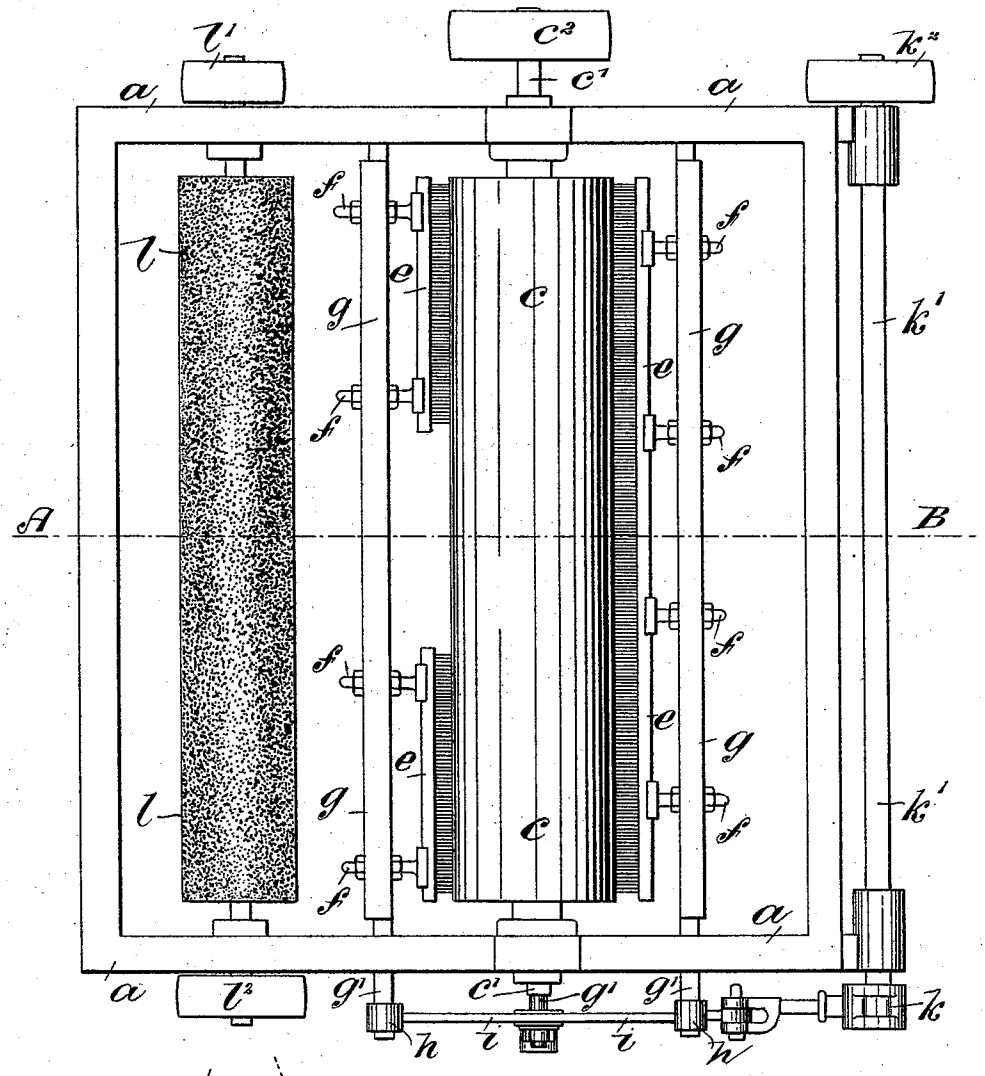


FIG. 4

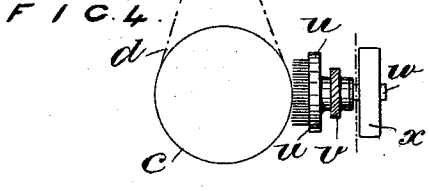
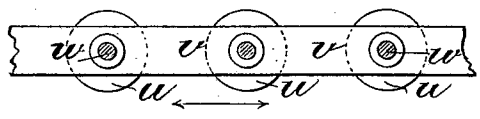


FIG. 5



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APPARATUS FOR WASHING PRINTERS' BLANKETS.

SPECIFICATION forming part of Letters Patent No. 540,735, dated June 11, 1895.

Application filed October 22, 1894. Serial No. 526,567. (No model.) Patented in England July 2, 1894, No. 12,772, and in France October 13, 1894, No. 242,071.

To all whom it may concern:

Be it known that we, WILLIE HADFIELD, colorist, JOSEPH JOHNSON SUMNER, mechanic, and HENRY HADFIELD, manager, subjects of the Queen of Great Britain and Ireland, residing at Furness Vale, in the county of Chester, England, have invented an Improvement in Apparatus for Washing Printers' Blankets, of which the following is a specification.

Our said invention relates to improved means for washing and cleansing printers' blanketing, for which Letters Patent have been issued in England, No. 12,772, dated July 2, 1894, and in France, No. 242,071, dated October 13, 1894.

We provide a drum or curved or other surface around which the blanketing is passed or over which it is drawn. As it passes around or over the said drum or surface, the discolored face of the blanketing is subjected to the operation of an oscillating scrubbing brush or of several oscillating scrubbing brushes made of bristles or other suitable scrubbing or cleansing material. The said brushes are mounted on vibrating levers or frames which are made to oscillate very rapidly in the direction of traverse of the blanket by reciprocating means the same as or similar to the well known doffing comb motion in carding engines. The quick up and down scrubbing action of the brush or brushes on the blanketing is an extremely effective means of loosening, dislodging and removing the discolorations and dirt on the blanketing, and is greatly superior to the action of the usual revolving brushes. In conjunction with the said rapidly oscillating brushes we also use spurt pipes discharging water or other cleansing liquid upon the face of the blanket, and these spurt pipes are situated in positions relatively to the brush or brushes which will give the most favorable cleansing results. The blanket lying close upon the drum or surface around or over which it passes, is presented unyieldingly to the action of the brush, so that the best results are obtained; but we might also apply the said cleansing brushes to the blanket between the carrying rollers or surfaces. As the spurt pipes play upon the face of the blanket only, the back is not needlessly saturated and can be kept almost dry.

To render our invention clearly understood we illustrate on the accompanying two sheets of drawings an apparatus for carrying our invention into practical effect.

On Sheet 1, Figure 1 is a vertical section of the apparatus at the line A B, Fig. 3. Fig. 2 is a side elevation. On Sheet 2, Fig. 3 is a plan. Figs. 4 and 5 illustrate a modified form of cleansing-brush.

The apparatus consists of a trough shaped chamber *a* supported by side standards *a'*. Within this trough and supported in journals *b*, we provide a drum *c* carried on an axle *c'* and capable of being revolved by the driving pulley c^2. The blanket (indicated by the dotted line *d*) passes partly around the drum *c*, the face of the blanket being outward. Around the drum and situated at suitable points in the circumference, we arrange scrubbing brushes *e* oscillating in the direction of traverse of the blanket, three sets of brushes being shown, although we do not confine ourselves to this.

The illustrated brushes are made of bristles *e'* inserted into the back *e*, and the said brushes are carried by adjustable studs *f*, which project through and can be adjusted in the vibrating bars *g*. These bars have pivot ends *g'* which project through adjustable bearings in the sides of the trough and carry at one end of each, a lever *h*, the said levers appearing clearly in Fig. 2. A side arm or lever *i* is connected to all three levers *h* as shown in Fig. 2 and the said arm *i* is connected to a quick running eccentric *k* on the end of the shaft *k'*. The shaft *k'* and eccentric are driven by the pulley k^2 which is connected by a belt to the pulley *l'* on the axis of the revolving dry brush *l*. The blanket *d* as it comes from the printing machine in the direction of the arrow, is led first over the carrying roller *m*; next partly around the drum *c*; thence over the carrying roller *n*; then to the backing roller *o* in passing under which it is subjected to the action of the revolving dry brush *l*, and afterward over the rollers *p*, *q* and *r* to the drying apparatus. Just above the two uppermost brushes *e* we arrange spurt

pipes *s s* which discharge water or other suitable cleansing liquid upon the face of the blanket *d* just before and immediately after it has been submitted to the action of the oscillating scrubbing brushes *e*. By the means hereinbefore described, as the blanket travels around the drum *c* the face is submitted to the scrubbing and cleansing action of the reciprocating brushes *e* which act in conjunction with the water and thoroughly cleanse and wash the blanket face. The blanket lying close to the surface of the drum *c*, presents an unyielding face to the brushes so that the best results are obtained. The spurt pipes act in conjunction with the brushes and as the cleansing liquid is discharged only upon the face of the blanket, the back is not needlessly saturated and can be kept quite or almost dry. After it leaves the drum *c* the blanket as it passes under the backing roller *o* is acted upon by the revolving dry brush *l*. This brushes away a large proportion of the moisture left on the face of the blanket and enables us entirely to dispense with squeezing rollers. The dry brush *l* is driven from a pulley l^2 as appears in Fig. 3. Any liquid that may fall into the trough is led away by the conduit *t* formed in the bottom of the trough.

In the example illustrated it will be noted that the last brushes *e* on the left hand side of the drum do not extend across the full width of the blanket. In practice it is the outer edges of the blanket which are apt to become most foul, and therefore in practice we aim at subjecting the edges to more prolonged treatment with the brushes than we think necessary in the case of the center of the blanketing. We do not however bind ourselves to this.

It will be apparent that although we have described an effective and useful mode of oscillating the brushes *e*, other means for so oscillating them might be adopted. For example instead of oscillating them in a circular path from pivots as described, we might reciprocate them in a straight path and this might be effected by means which will readily suggest themselves to a skilled mechanic.

We consider that the use of cleansing brushes of the indicated nature and oscillating in the direction of the traverse of the blanket, is the gist of our invention and so long as these are used the mere arrangement of mechanism is not an essential. In our opinion it is a distinct advantage that the said oscillating brushes should act upon the blanket as it is passing over a drum or roller or curved or other backing surface, but such oscillating brushes might be applied between the said carrying rollers or surfaces.

As a modification of our invention we might use revolving brushes of a disk shape and traversing to and fro across the width of the cloth. For example in Figs. 4 and 5 of the drawings, the disk brushes *u* are or may be mounted on a carrying bar *v* which is oscillated to and fro across the width of the blanket *d* as it moves round the roller *c*. The short spindle *w* of each brush carries a pulley *x* by means of which the brush is rotated, and as the brushes revolve the carrier *v* is moved to and fro so that the brushes have a species of compound action on the blanketing. The spurt pipes, trough and other adjuncts are used in conjunction with these revolving disk brushes just as in the case of the oscillating brushes already described.

We claim as our invention—

1. In combination with the drum and rollers for guiding the blanket thereto, the brushes and means for reciprocating said brushes in the direction of traverse of the blanket substantially as described.

2. In combination the drum, the guide rollers for directing the blanket about the same, the oscillating brushes arranged on rocking shafts arranged parallel with the face of the drum, and means for rocking the said shafts, substantially as described.

3. In combination, the drum, the guide rollers for directing the blankets about the same, the oscillating brushes arranged on rocking shafts, at the front, rear and bottom of the drum, the arms *h* connected to the shafts and the reciprocating rod connected to the several arms *h*, substantially as described.

4. In combination, the drum and the rollers for guiding the blanket, the cleaning brushes, the backing roller *o*, and the rotary drying brush L under the roller *o* arranged to remove the moisture from the blanket.

In witness whereof we have hereunto set our hands in presence of two witnesses.

WILLIE HADFIELD.
JOSEPH JOHNSON SUMNER.
HENRY HADFIELD.

Witnesses:
DAVID FULTON,
JOSHUA ENTWISLE.