

W. STABLEFORD.
 MULTIPLE COPYING MACHINE,
 APPLICATION FILED AUG. 31, 1908.

981,132.

Patented Jan. 10, 1911.

3 SHEETS-SHEET 1.

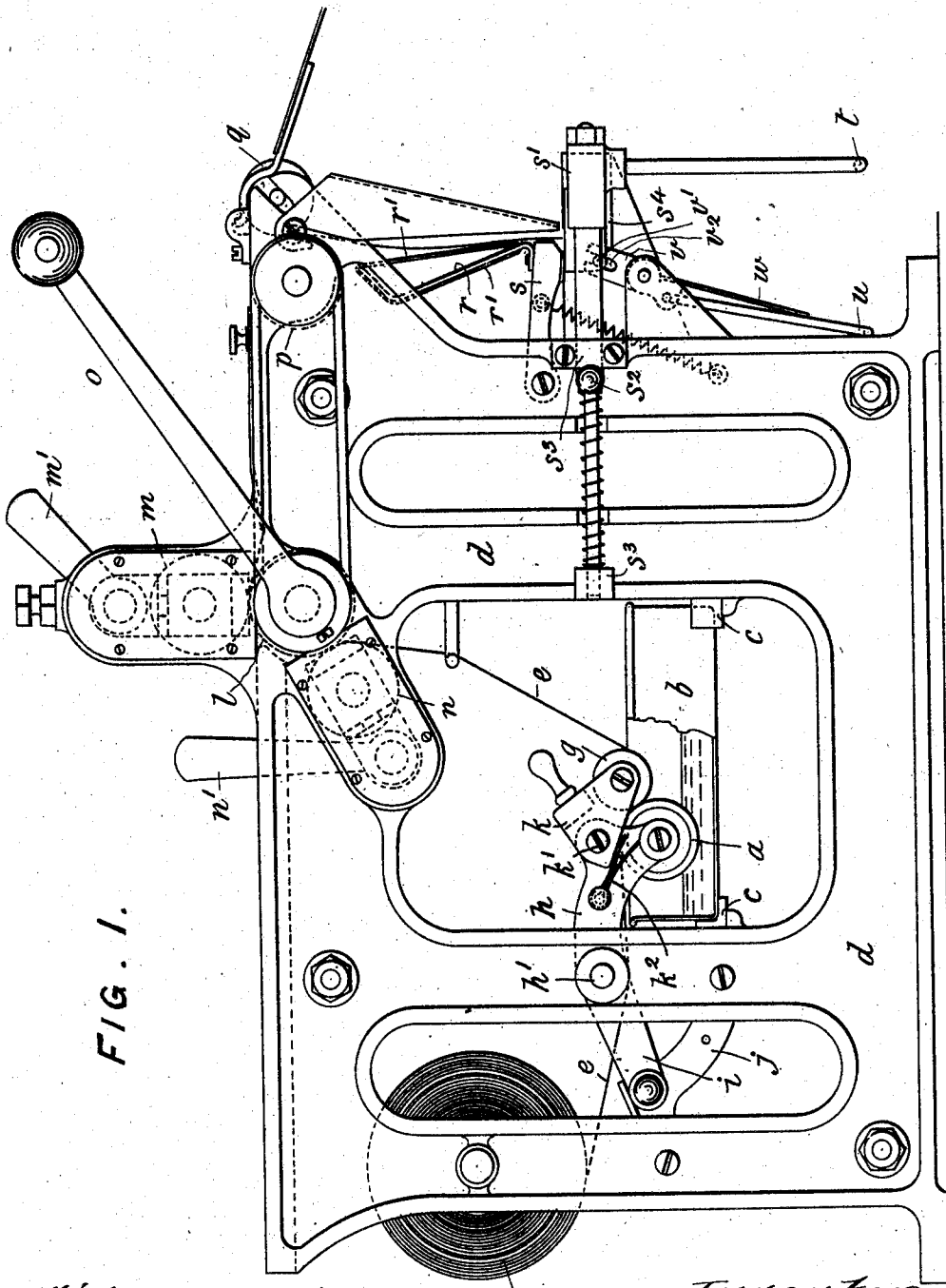


FIG. 1.

Witnesses:

[Signature]
Ed. Kesler

Inventor
William Stableford
James L. Norris
Atty.

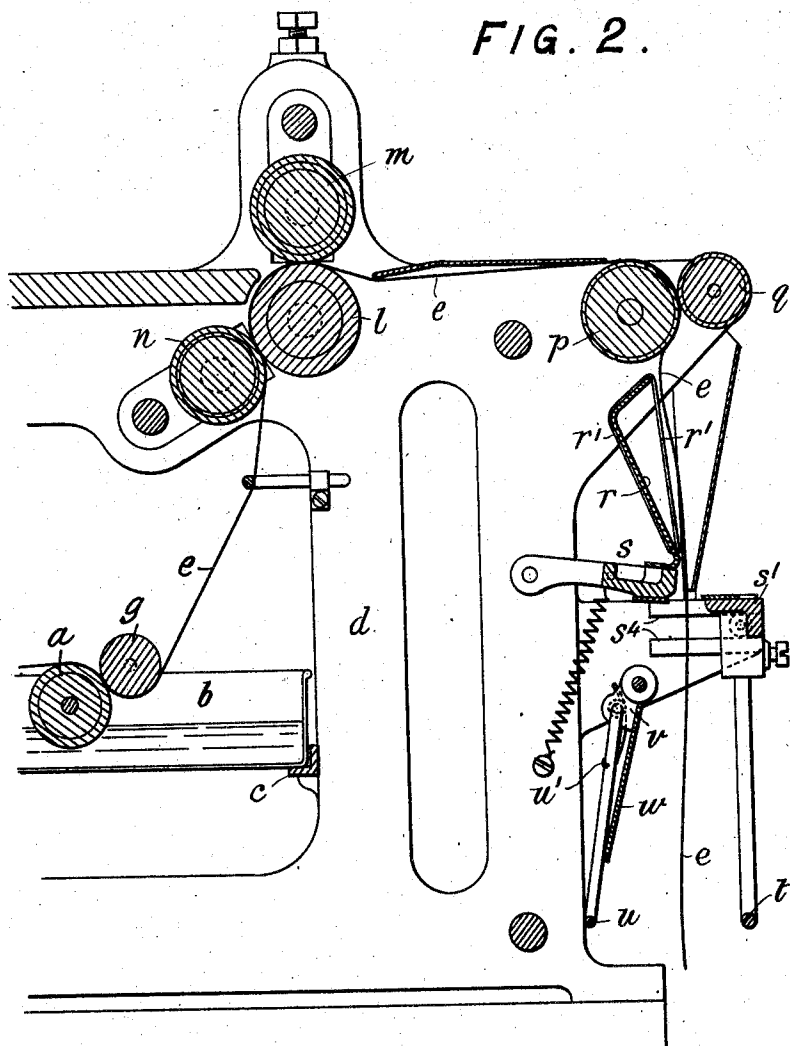
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3 SHEETS—SHEET 2.

FIG. 2.



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3 SHEETS—SHEET 3.

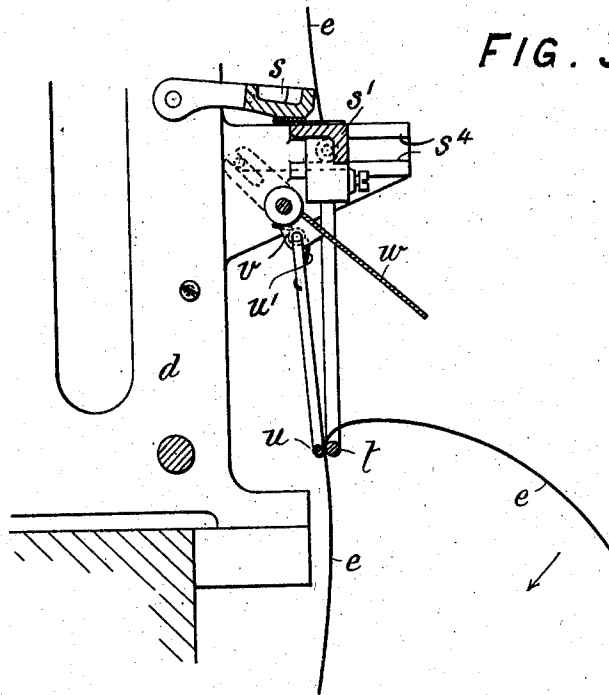


FIG. 3.

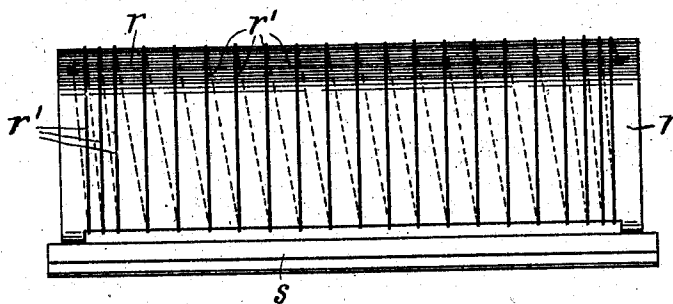


FIG. 4.

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att'y

UNITED STATES PATENT OFFICE.

WILLIAM STABLEFORD, OF LONDON, ENGLAND, ASSIGNOR TO THE ROTEX MANUFACTURING COMPANY, A CORPORATION OF NEW YORK.

MULTIPLE COPYING-MACHINE.

981,132.

Specification of Letters Patent.

Patented Jan. 10, 1911.

Application filed August 31, 1909. Serial No. 515,450.

To all whom it may concern:

Be it known that I, WILLIAM STABLEFORD, subject of the King of Great Britain, residing at 57 Holborn Viaduct, in the city of London, England, merchant, have invented certain new and useful Improvements Relating to Multiple Copying-Machines, of which the following is a specification.

My invention relates to improvements in multiple copying machines and more particularly to that type in which means are provided for damping the paper strip on both sides without passing the same through a water bath, thereby enabling the use of a paper of much stronger quality.

My invention has for its object improved damping apparatus and improved means for guiding the paper and collecting the severed portions. According to my invention, the water is conveyed to one side of the paper and pressed through the paper to the other side, means being provided whereby the proper degree of dampness may be regulated which means are independent of the means for regulating the pressure of the copying rollers.

In the accompanying drawings, Figure 1 is a side elevation of the machine, Fig. 2 is a section of a portion of the machine, Fig. 3 is a sectional detail view of the paper collecting device, and Fig. 4 is an elevation of the guide for the paper.

I employ a covered roller *a* which is partially immersed in water contained in a suitable tray *b* which is supported upon rails *c* fixed to the frame *d*. The paper *e* from the supply roll *f* passes over the upper portion of the covered roller *a* and below a pressure roller *g* which presses the paper into close contact with the covered roller *a* and forces some of the water through the paper. The covered roller *a* and the pressure roller *g* are carried by a frame *h* pivoted at *h'*, means being provided for regulating the position of said frame with regard to the water bath, such as the arm *i* and quadrant *j* shown in Fig. 1. In a similar manner, the pressure roller *g* is mounted in a frame *k* which may be moved about its pivots *k'* on the frame *h*, to or from the paper, and the desired pressure may be applied through the medium of springs *k²* or by the weight of the frame *k* and roller *g*, or by both.

l is the main copying roller, *m* is the adjustable copying roller and *n* is a pressure roller working against the roller *l*. These rollers are formed of solid metal covered with vulcanite, rubber, or other suitable material, the main copying roller *l* being mounted in fixed bearings and rotated by means of the handle *o*, and the copying roller *m* being adjustable to and from the fixed roller by a lever *m'* and cam or other suitable mechanism. The pressure roller *n* is independently adjustable to and from the main roller *l* by a lever *n'* and cam or other convenient mechanism, and serves to regulate the amount of moisture in the paper according to the quality or quantity of the ink on the document to be copied.

The damp paper, after passing through the copying rollers, passes between a pair of rollers *p*, *q*, and descends at the end of the machine. At this part instead of having flat guide plates to which damp paper would sometimes cling, I now provide a grid-like guide which may be formed of cords laced vertically, or a vertically ribbed or corrugated plate, or a number of vertically disposed wires, suitably supported. The guide shown on the drawings consists of a bent plate *r* mounted upon the pivoted cutter frame *s* and wound with cord *r'* as clearly shown in Fig. 4.

The paper cutting mechanism, which forms no part of the present application, comprises a pivoted cutter frame *s* carrying a blade and a sliding cutter frame *s'* operated by means of a handle *s²*, the cutter frame *s'* being provided with a blade and being mounted in suitable guides *s³*, *s⁴*.

For collecting the severed portions of paper strip as they fall from the cutting mechanism I provide a collecting bar *t* which is fixed to the sliding cutter frame *s'*. On operating the cutting mechanism *s*, *s'*, by the sliding handle *s²* the paper *e* is pressed against the side of the bar *t* by a frame *u* pivotally mounted in connection with the side arms *v* which are operated by the cutting mechanism by means of the pin *v'* on the sliding cutter frame *s'* and slot *v²* in one of the side arms, a spring *u'* being employed to control the motion of the frame *u*. A depending plate *w* is fixed to the arms *v* and serves, at the moment of severing, to throw

the upper part of the paper over the bar *t* so that it becomes suspended thereby as shown in Fig. 3.

I claim:—

1. In a multiple copying machine, a covered roller, a pivoted frame carrying said roller, adjusting means for said pivoted frame, a pressure roller, a frame carrying said pressure roller pivotally mounted on said pivoted frame, and means imparting the desired pressure, as set forth.
2. In a multiple copying machine a guide formed with a grid-like surface guiding the damp paper strip to the cutting mechanism, as set forth.
3. The combination of a main copying roller, means rotating same, an adjustable copying roller, an adjustable pressure roller, a covered roller applying water to one side of a paper strip, means pressing said paper strip against the covered roller thereby forcing the water through said strip, and a grid-like guide for the damp paper, as set forth.
4. The combination with a main copying roller, means rotating same, an adjustable copying roller, an adjustable pressure roller and a paper damping device, of a collecting device for the severed portions of paper strip comprising a collecting bar, a frame adapted to press the paper against said bar, a plate adapted to throw the upper part of the paper over the bar, and means actuating said frame and plate as set forth.
5. In a multiple copying machine the combination with a sliding cutter frame of a collecting device for the severed portions of paper strip comprising a bar fixed to said frame, a pair of pivoted arms actuated by the sliding cutter frame, a frame pivoted to said arms, a spring controlling said frame, and a plate fixed to said arms, as set forth.
6. In a multiple copying machine, a grid-like guide for the damp paper, a pivoted cutter frame carrying a blade, a sliding cutter frame carrying a blade, a bar fixed to the sliding cutter frame, a pair of pivoted arms actuated by the sliding cutter frame, a frame pivoted to said arms, a spring controlling said frame, and a plate fixed to said arms, as set forth.
7. In a multiple copying machine, a tray containing a liquid bath, a damping roller arranged to be partially submerged in the bath, an adjustable frame carrying the damping roller, and means for drawing a strip of paper over the unsubmerged surface of the damping roller.
8. In a multiple copying machine, means for severing a strip of paper into lengths, means for collecting the severed lengths including a collector bar and a gripping part movable relatively thereto, and a plate also movable relatively to the collector bar to throw the severed lengths over said bar.
9. In a multiple copying machine, means for collecting severed paper strips consisting of a collector bar and a frame movable relatively thereto and into and out of engagement therewith, a pivoted arm carrying the frame and having a slot at its upper end, and a sliding part having a pin to engage in the slot and effect a movement of the arm.
10. In a multiple copying machine, means for collecting severed paper strips consisting of a collector bar and a frame movable relatively thereto and into and out of engagement therewith, a pivoted arm carrying the frame and having a slot at its upper end, a sliding part having a pin to engage in the slot and effect a movement of the arm, and a depending plate carried by the arm to throw the severed lengths over the collector bar.
11. In a multiple copying machine, means for collecting severed paper strips comprising a collector bar, a frame movable relatively thereto, a pair of pivoted arms to which the frame is in turn pivoted, and means for effecting the pivotal movement of the arms.
12. In a multiple copying machine, means for collecting severed paper strips comprising a collector bar, a gripping part movable relatively thereto into and out of engagement therewith, and a plate likewise movable relatively to said bar to throw the severed sheets over the same.
13. In a multiple copying machine, means for collecting severed paper strips comprising a slidable part carrying a collector bar, a pivoted part carrying a frame movable toward and away from the collector bar, and connections between the slidable part and the pivoted part whereby one of said parts has movement consequent to the movement of the other.
14. In a multiple copying machine, means for collecting severed paper strips comprising a collector bar and a sheet deflecting plate movable relatively to said bar to throw the severed sheets over the same.
15. In a multiple copying machine, means for collecting severed paper strips comprising a slidably movable collector bar, a pivotally movable deflector plate for throwing the severed sheets over the bar, and operative connections between said bar and said plate whereby a movement of the one results in a movement of the other.
16. In a multiple copying machine, companion elements consisting of a collector part and a gripping part, said elements having relative approaching and receding movements, and a sheet deflecting plate movable with relation to the collector part to throw the severed sheet over the same.
17. In a multiple copying machine, means for collecting severed paper strips comprising a collector bar, a cooperating part movable with relation thereto, and connections

between the bar and the part whereby a movement of the one results in a movement of the other.

18. In a multiple copying machine, two companion elements consisting of a collector part and a sheet engaging part coöperating therewith, each of said elements being movable simultaneously toward and away from one another, and operative connections between the elements whereby movement of the one in one direction automatically produces a movement of the other in the opposite direction.

19. In a multiple copying machine, sheet severing mechanism including a movable blade carrying part, sheet collecting mechanism including two coöperating elements, each of which is movable simultaneously toward and away from the other, one of the elements being carried by the blade carrying part and being movable therewith, and operative connections between the other element and the blade carrying part whereby a movement of the latter in either direction positively produces a corresponding movement of the former in an opposite direction.

20. In a multiple copying machine, sheet severing mechanism including a movable blade carrying part, sheet collecting mechanism including two coöperating elements relatively movable toward and away from one

another, and connections between the blade carrying part and one of the elements whereby a movement of the former in either direction positively produces a corresponding movement of the latter in an opposite direction and with relation to its companion co-operating element.

21. In a multiple copying machine, sheet severing mechanism including a movable blade carrying part, sheet collecting mechanism including as companion elements a relatively movable collector bar and gripping part coöperating therewith and also a deflector plate, likewise movable with relation to said collector bar to throw the severed sheets over the same, and operative connections between the blade carrying part and the collecting mechanism whereby a movement of the former in either direction positively produces corresponding movements of the movable elements of said mechanism in a direction opposite to the direction of movement of said blade carrying part.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM STABLEFORD.

Witnesses:

GEORGE C. DOWNING,
WALTER J. SKERTEN.