

(No Model.)

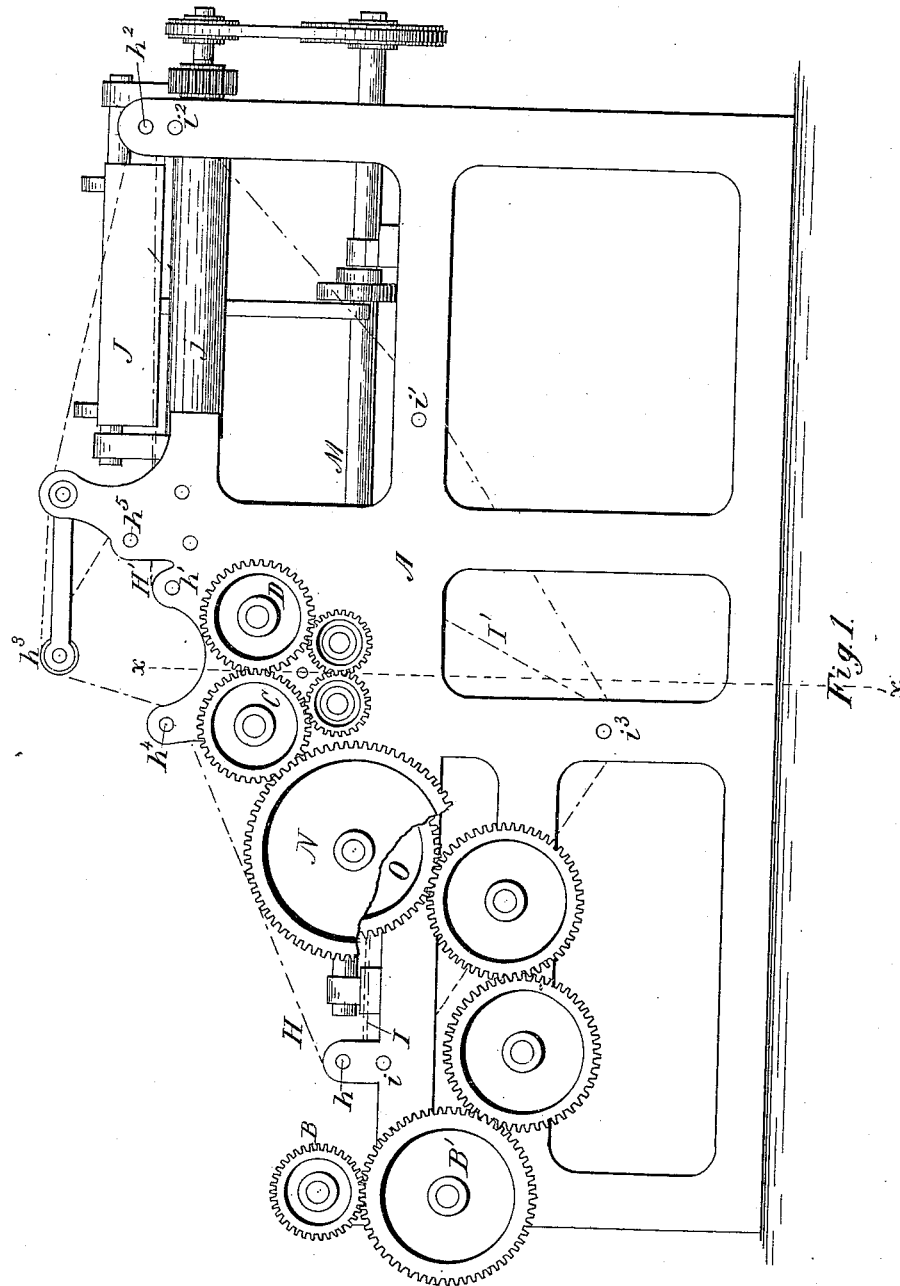
3 Sheets—Sheet 1.

W. SCOTT.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 265,546.

Patented Oct. 3, 1882.



Witnesses  
W. C. Corlies  
Jno. C. MacGregor,

Inventor  
Walter Scott  
By Coburn T. Thacher  
Attorneys

(No Model.)

3 Sheets—Sheet 2.

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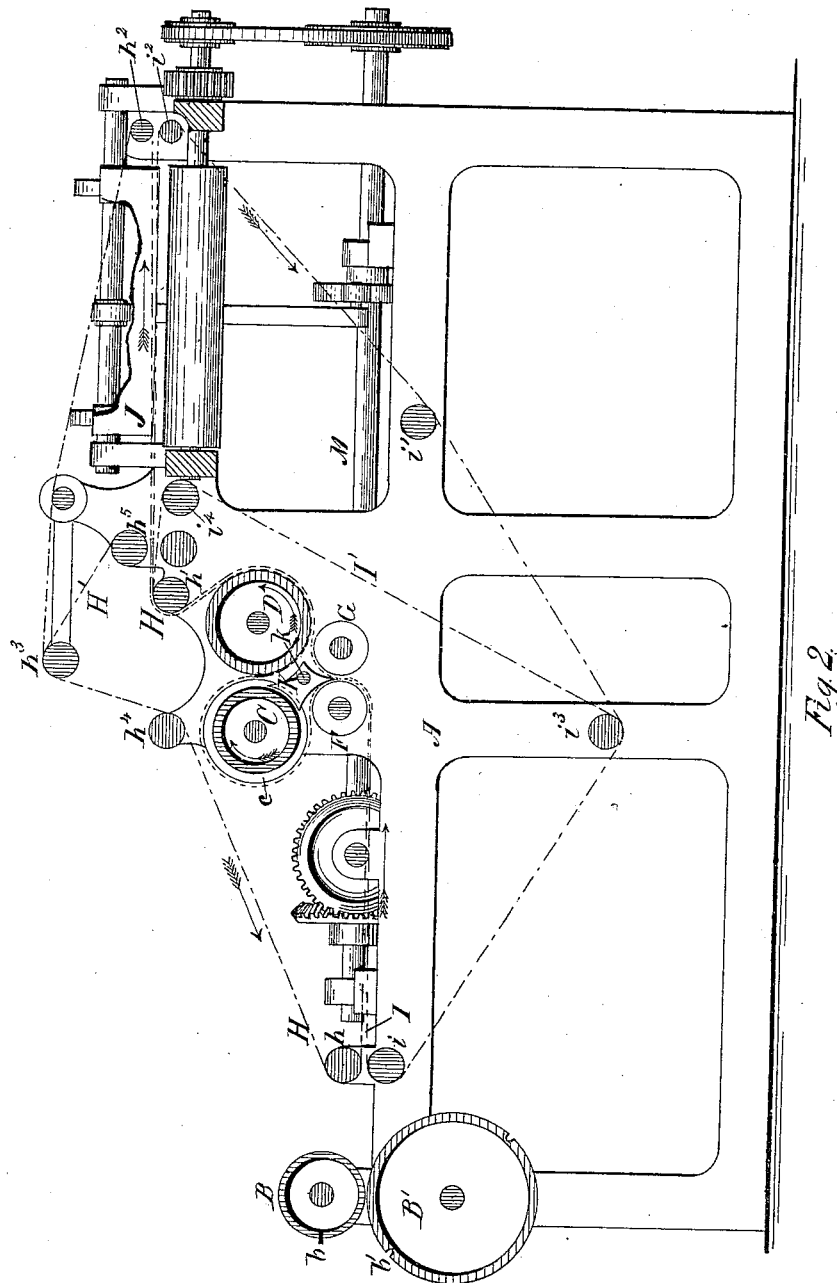


Fig. 2.

Witnesses

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Fig. 5.

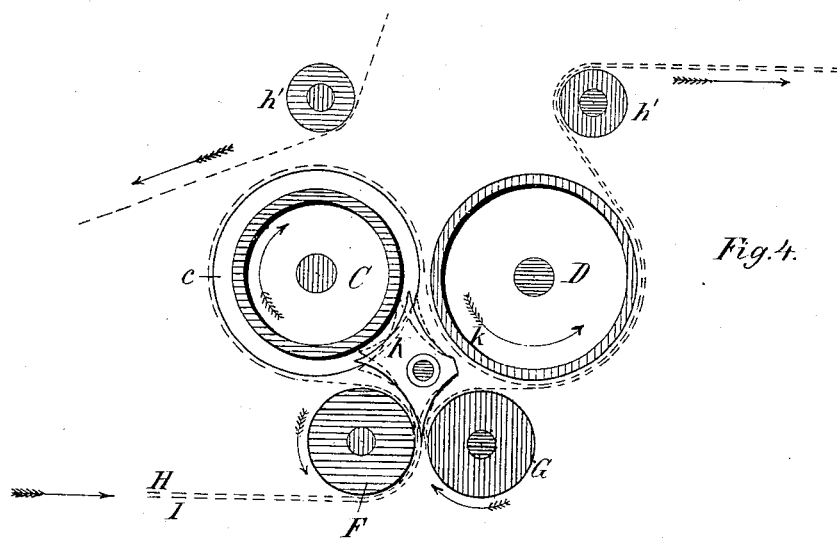
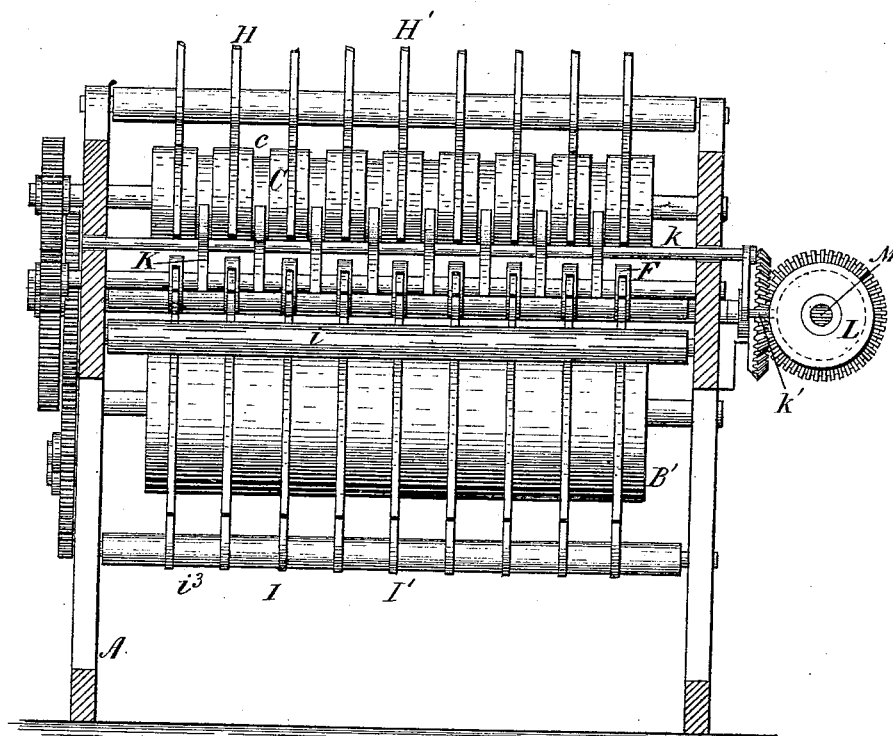


Fig. 4.

Witnesses

W. C. Corlies

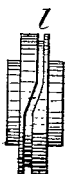
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Fig. 5. Walter Scott

By Coburn Thacher

Attorneys



# UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

## SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 265,546, dated October 3, 1882.

Application filed May 10, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER SCOTT, of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sheet-Delivery Apparatus for Printing-Machines, which are fully described in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 represents a front side elevation of a machine embodying my improvements; Fig. 2, a longitudinal vertical section of the same; Fig. 3, a transverse section of the same, taken on the line *x x*, Fig. 1; Fig. 4, a detail vertical  
15 section of the sheet deflecting and imposing mechanism on an enlarged scale, and Fig. 5 a detached view of the cam for vibrating the deflecting-switch.

My invention relates to mechanism whereby  
20 the sheets are separated in passing the cutting-cylinders, and are gathered or collected, so as to be delivered, two or more in a single signature, to the folding mechanism.

The invention consists in special devices and  
25 combinations of devices for effecting these results, all of which will be hereinafter fully described, and the novel improvements pointed out more definitely in the claim.

In all of its main features the mechanism  
30 herein referred to is substantially the same as shown and described in an application of even date herewith, relating to improvements of a similar kind; and designated "Case A." In this machine, however, I have not shown the  
35 device for changing speed or a pasting mechanism. The main difference between the machine shown in the present case and that shown in "Case A" is in the mechanism employed to deflect the sheets.

40 In the drawings, A represents the main or supporting frame, which may be an extension to the main frame of the printing mechanism, it being understood, of course, that the mechanism herein described and shown is to be used  
45 in connection with printing mechanism, although I have not shown in the drawings any of the printing-cylinders, as the printing mechanism constitutes no part of my present invention, and its arrangement relative to the cutting-cylinders, which are here shown, will be  
50 readily understood by those familiar with machines of this description.

The cutting-cylinders, which are usually considered a part of the printing mechanism, are shown in the drawings, being represented by  
55 B and B' at the front end of the machine, the former of which is a cutter-cylinder, and is provided with a perforating-blade, *b*, and the latter is a corresponding grooved cylinder, and is provided with the usual cutting-grooves, *b'*, for  
60 the reception of the blades. This cylinder in the drawings is shown twice the size of the blade-cylinder, and consequently is provided with two cutting-grooves.

Two cylinders, C and D, are arranged in the  
65 same horizontal plane, some distance in rear of the cutting-cylinder. These cylinders are of the same size, and in circumference are intended to be equal to the length of the sheets of paper plus the distance between the individual  
70 sheets after separation—that is, the cylinders will make one revolution to each individual sheet as it is carried through the machine. The front cylinder, C, is provided with a series of shallow grooves, *c*, running around it.

75 A pair of tape-rollers, F and G, are arranged just below the rollers C and D, the bite of the latter being in about the same vertical plane as that of the former.

A series of upper tapes, H, are arranged to  
80 run around a tape-roller, *h*, just in rear of the cutter-cylinder, thence to the front tape-roller, F, under and around which they pass to the cylinder C, over which they are carried, and down between the cylinders C and D, passing  
85 underneath and back around the latter up over the tape-roller *h'*, thence to and around roller *h''* at the rear upper part of the main frame. Thence they pass upward and forward  
90 over a roller, *h'''*, and under a roller, *h''''*, in the upper part of the frame, to the roller *h*.

A series of lower tapes, I, are arranged  
around a tape-roller, *i*, just below the roller *h*,  
thence to the roller F, underneath which they  
pass up between it and the roller G, over the  
95 latter to and around the rear of the cylinder D, up over the roller *h'* to and around the roller *i''*, just below the roller *h''*. Thence they run forward and downward under the rollers  
100 *i'* and *i'''*, arranged in the bottom part of the main frame, to the front roller, *i*.

To accommodate the folding mechanism, which is arranged at the rear of the machine, as hereinafter described, the central tapes of

both sets are given a somewhat different path, so as not to pass back over the rollers  $h^2$   $i^2$  at the extreme rear end of the machine. The two upper central tapes, H', after leaving the roller  $h^1$ , are carried under and around the roller  $h^3$ , arranged just above and only a short distance in rear of the roller  $h^1$ . Thence they pass upward over the roller  $h^3$ , and afterward follow the same path as the outside tapes, H. The central lower tapes, I', after leaving the roller  $h^1$ , pass to and down around the back of the roller  $i^1$ , arranged a little distance in rear of the former. Thence they pass down to and underneath the roller  $i^3$ , from which point they take the same path as the outer tapes, I. Obviously this arrangement will leave an open space at the rear of the machine between the outer sets of tapes. In this open space is arranged the mechanism for making the first fold in the sheets. In the drawings this mechanism is illustrated by the vibrating creaser J, operating in connection with two ordinary folding-rollers,  $j$ ; but this is only for illustration, as any known folding devices may be used for this purpose.

A series of switch-guides, K, mounted on a rock-shaft,  $k$ , is arranged in the space between the cylinders C and D and the tape-rollers F and G. The lower tapering ends of these switches extend down between the two tape-rollers, and they are extended upward above the rock-shaft, the upper portion being formed to constitute a guide for directing the sheets which are carried around the cylinder C to and underneath the cylinder D.

The rock-shaft  $k$  projects at the back side of the machine, and is provided with a crank-arm,  $k'$ , the end of which enters the groove of a cam, L, mounted on a side shaft, M.

The cam-groove  $l$  is of a well-known form, adapted to vibrate the lever or pin entering it from one side to the other at intervals and hold the pin in position between said intervals—that is, it has two straight sections, one at one edge of the periphery and the other at the opposite edge and opposite side of the shaft, with two short inclined sections uniting the two straight sections on opposite sides of the disk. The position of the lower ends of the switches is such that when turned to one side they will direct the sheet up over one of the tape-rollers, and when turned to the other side will direct the sheet over the other roller. The rotation of the cam vibrates the switches, so that they take these respective positions at the required intervals to deflect the sheets, as will be hereinafter explained; but it is obvious that the construction and location of the switches must be such that when they are turned into the grooves of the cylinder C they will at their lower ends open the way for the passage of sheets up over the roller F, and will be in position to deflect the sheets into this passage, and when they are turned so as to close this passage and turn the sheets into the passage up over the roller G the upper portion of the

switches should not close the way around the cylinder D, and in neither position should the lower ends touch either roller F or G, so as to interfere with passing sheets. This construction and arrangement are illustrated in Fig. 4 of the drawings, in which the switches are represented about in position to deflect a sheet into the passage around the roller G, and it will be seen that the extreme upper ends of the switches are still in the grooves of the cylinder C, and the left-hand points so far removed from the cylinder D that if the switches should be turned to open the way and deflect the sheets in the other direction around the roller F the passage around the cylinder D would not be closed.

The gearing is constructed and arranged so that the delivery and folding mechanism will be driven at a somewhat greater speed than the cutting-cylinders. This is effected, as shown in the drawings, by mounting two wheels, N and O, upon the driving-shaft, the former of which is larger than the latter. The former engages with a gear-wheel on the shaft of the roller C, through which the collecting, delivering, and folding mechanism is driven, while the latter or smaller wheel is connected by a train of gearing to a wheel on the shaft of the lower cutting-cylinder; all of these latter wheels being shown in the drawings of larger size than the wheel on the shaft of cylinder C. Obviously, therefore, the speed of the former will be greater than that of the latter.

I have not shown in the drawings the pasting device or the device for changing the speed of the collecting, delivering, and folding mechanism to adapt it to single sheets, which are shown and described in my application heretofore mentioned; but obviously those devices, or others substantially like them, may be applied to this machine without difficulty by those familiar with machinery of this description; and I have not described in detail the construction and arrangement of all the gearing belonging to the machine, as it will be readily understood from the drawings and the description below of the operation of the several devices, it being understood, of course, that the gearing and all other devices for moving any of the parts must be so constructed, arranged, and timed relatively as to produce the movements described below and at the required times.

The directions in which the carrying-tapes and main cylinders, rollers, and gear-wheels move are indicated by arrows in the drawings, so that the course of the sheets of paper will be readily seen.

The operation of this mechanism is as follows: The printed web of paper is run in from the impression-cylinders to the printing-machine between the cutting-cylinders, by which it is perforated along the lines of required division to separate the web into sheets. Thence the leading end is delivered to the tapes H and I, by which it is carried along to the roller F,

where it is nipped between the lower tapes and the rollers, thereby separating the sheet by reason of the more rapid movement of said roller. Now, suppose the several parts to be in position represented in Figs. 2 and 3 of the drawings. The leading end of the separated sheet is carried up between the rollers F and G, and as the guide-switches are thrown back toward the roller G it will be deflected forward, so as to be carried by the upper tapes to and around the cylinder C. Just before the second sheet reaches the rollers the switches are changed, being turned forward toward the roller F, so that the leading end of the second sheet will be deflected to the rear and carried back by the lower tapes toward the cylinder D. In the meantime the leading end of the first sheet has been brought down between the cylinders C and D and directed by the upper portion of the switches to and under the latter cylinder, and the circumference of the cylinder C being as stated above, it is evident that the leading end of the second sheet will join the leading end of the first just as it passes out from the guides, and the united ends of the two sheets will be carried together into the tapes H and I, under the cylinder D, and thence up over the cylinder at the rear, the two sheets

thereby being placed one above the other, in which condition, as a single signature, they are carried up and back by the tapes over the folding-rollers in proper position for the operation of the creasing-blade.

Some of the devices, especially those for imparting the required movement, may be changed, or others substituted therefor, without affecting the principle of operation, and therefore I do not wish to be understood as limiting my improvements to the precise construction and arrangement of all the parts herein shown and described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The cylinders C D, in combination with the rollers F G, conveying-tapes H I, and vibrating switches K, provided with extensions at their upper ends, constructed and adapted to operate as guides to the leading end of sheets passing from the roller F to the cylinder C and from the latter to the cylinder D, substantially as described.

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Witnesses:

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