

(No Model.)

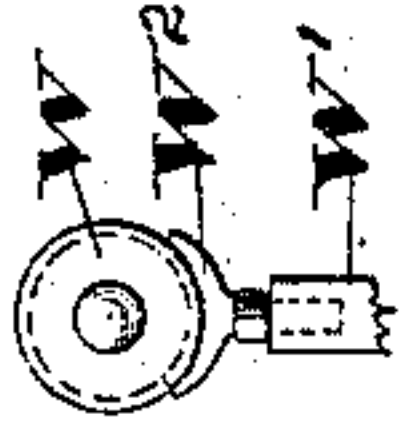
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SHEET DELIVERY MECHANISM FOR PRINTING PRESSES.

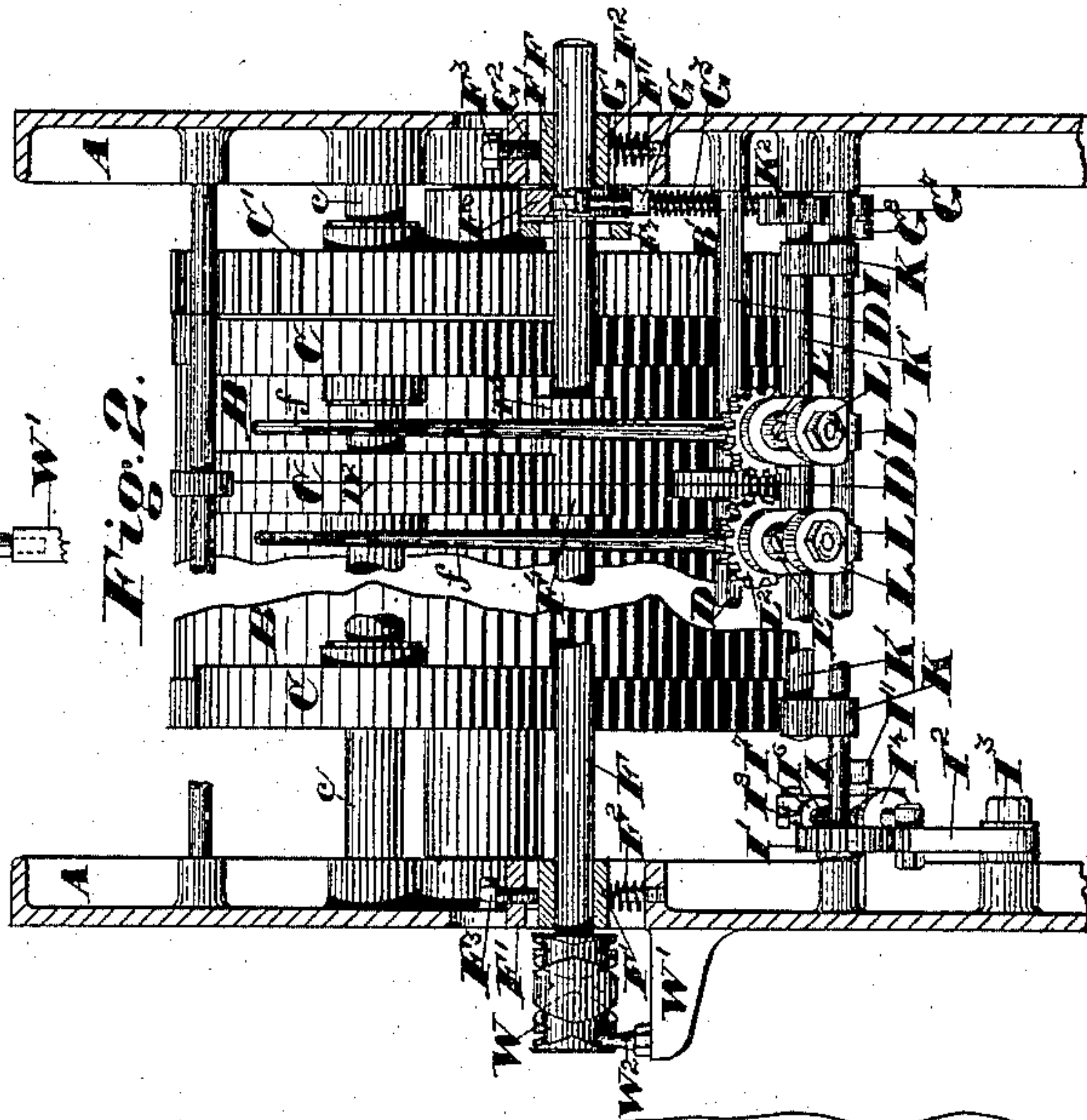
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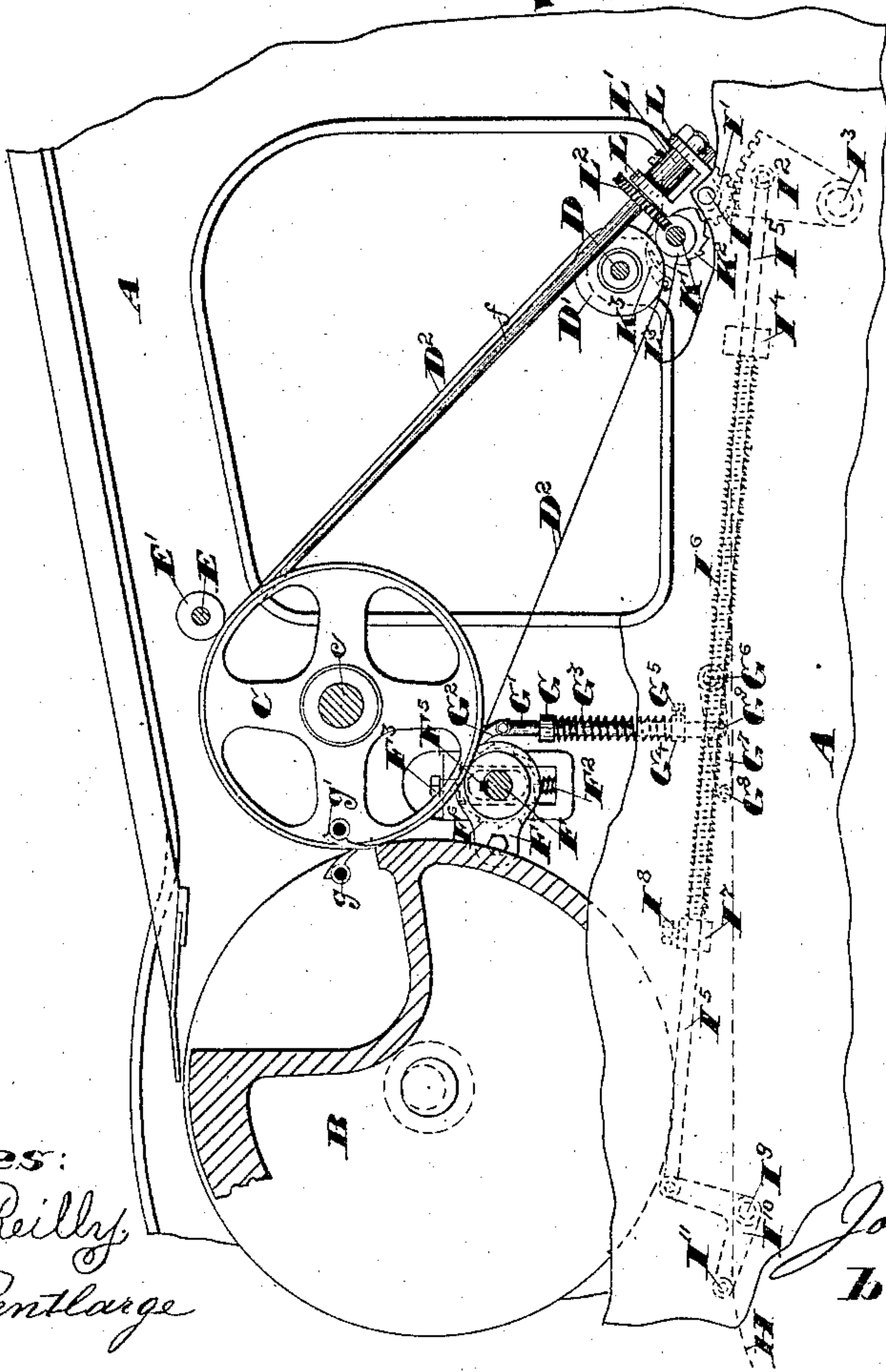
*Fig. 3.*



*Fig. 2.*



*Fig. 1.*



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# UNITED STATES PATENT OFFICE.

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## SHEET-DELIVERY MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 319,249, dated June 2, 1885.

Application filed July 7, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. HAWKINS, of Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Sheet-Delivery Mechanism for Printing-Presses, which improvement or invention is fully set forth and illustrated in the following specification and accompanying drawings.

10 The object of this invention is to prevent smutting and soiling the newly-printed surfaces of sheets in the process of delivering them from a printing-press in all such methods of delivery as bring delivery cylinders, strings, 15 tapes, or fly-fingers in contact with said newly-printed sides.

The invention consists of the parts hereinafter particularly described, and specifically set forth in the claims.

20 In the accompanying drawings, Figure 1 is a sectional elevation, and Fig. 2 a rear elevation, partly in section, of those parts of a cylinder printing-press involving this invention. Fig. 3 is an end elevation of the traversing 25 worm and guide, hereinafter described.

In said figures the several parts are respectively indicated by letters, as follows:

30 A A indicate portions of the main side frames, one of which has the upper part broken away in Fig. 1 to show the interior parts.

B is the impression-cylinder, and *c* a shaft journaled in the frames A, carrying a series of delivery wheels or cylinders, C, or one continuous delivery-cylinder, as may be preferred.

35 B' is a gear-wheel secured to the impression-cylinder B, or its shaft, and C' is a similar gear meshing with gear B', secured to shaft *c*. The cylinders B and C each carry the usual grippers, *g g'*, operated to open and close at the 40 proper times in any of the usual and well-known ways.

D is a shaft journaled in the frames A, carrying a series of tape or cord pulleys, D'.

45 D<sup>2</sup> indicates a series of cords or tapes enwrapping the delivery-cylinders C and the tape or cord pulleys D'.

50 E is a shaft carrying a series of pressure-pulleys, E'. Said shaft is journaled in the frames A in such manner as to rise and fall slightly, to allow said pulleys to rest by their own weight upon the cylinders C, or upon the

sheets as they pass between the pulleys and the cylinders. Said pulleys are generally placed to run over the unprinted margins of the sheets.

F is a shaft journaled in boxes F', adjustably secured to the frames A by the springs F<sup>2</sup> 55 and the set-screws F<sup>3</sup>. Upon shaft F is secured a covering of flannel, felt, cotton cloth, or other suitable cleansing and ink-absorbing material, F<sup>4</sup>, made continuous or in sections, according as the delivery-cylinder C may be 60 made continuous or in a series of short cylinders, preferably the latter way, as shown in the drawings.

Secured to shaft F by a feather, F<sup>5</sup>, in such 65 a way that the shaft F may freely slide within it endwise, but be forced to rotate with it, is a ratchet, F<sup>6</sup>. Said ratchet is held from moving endwise with the shaft F by a cap, F<sup>7</sup>, secured to the frames A. The set-screws F<sup>3</sup> 70 limit the upward position of the shaft F, and the springs F<sup>2</sup> keep shaft F up to that limit. Thus the set-screws F<sup>3</sup> may be set so that the covering F<sup>4</sup> of shaft F shall come in contact with the surface of the delivery-cylinder C, 75 and with the cords or tapes D<sup>2</sup>, enwrapping them, and remove from them any ink which may adhere to them as offset upon them by the passing sheets. Sliding in the lug G, secured to the frame A, is a rod, G', having pivoted 80 to its upper end a pawl, G<sup>2</sup>, which engages the ratchet F<sup>6</sup>. The rod G, carrying the pawl G<sup>2</sup>, is depressed by a spring, G<sup>3</sup>, surrounding said rod and reacting against the lug G and a collar, G<sup>4</sup>, secured to the rod G' by a 85 set-screw, G<sup>5</sup>.

Pivoted to the frame A at G<sup>6</sup> is a lever, G<sup>7</sup>, carrying a roller, G<sup>8</sup>, which engages an incline on the type-bed, such as is indicated in dotted lines at H, Fig. 1. The rod G' is pivoted to 90 the lever G<sup>7</sup> at G<sup>9</sup>.

By the mechanism just described the shaft F may be rotated one tooth of the ratchet F<sup>6</sup> for each double excursion of the type-bed. (The type-bed itself is omitted in the figures 95 for the sake of clearness of illustration.)

To one end of shaft F is secured an endless worm, W, and pivoted in a bracket, W', extending from one of the frames A, is a curved guide, W<sup>2</sup>, engaging the endless groove in the 100 worm W. Fig. 3 gives an end elevation of this apparatus, which constitutes a well-known



device for giving a reciprocating motion to a shaft by means of its own rotation. Thus by the slow intermittent rotation of shaft F, by means of the ratchet F<sup>6</sup> and pawl G<sup>2</sup>, said shaft  
 5 also acquires a slow end motion by means of the worm W and guide W<sup>2</sup>, and thus continuously presents a new surface of its covering F<sup>4</sup> in contact with the delivery-cylinders C and strings or tapes D<sup>2</sup> until said covering may  
 10 become so completely soiled as to require renewal.

The object of the mechanism so far described is to cleanse and keep clean the surfaces of the delivery-cylinders C and the cords or tapes D<sup>2</sup>.  
 15 The movements of the pad or roller F<sup>4</sup> are sufficiently slow to permit any portion of its surface once soiled to become dried before again being presented to act as an ink-absorbent surface.

20 The shaft I, journaled in the frames A, has secured to it at one end a toothed pinion, I<sup>1</sup>.

I<sup>2</sup> is a toothed sector engaging the pinion I<sup>1</sup>, pivoted to frame A at I<sup>3</sup>.

I<sup>4</sup> is a lug attached to the frame A, through  
 25 which slides a connecting-rod, I<sup>5</sup>. Surrounding the rod I<sup>5</sup> is a spring, I<sup>6</sup>, reacting against lug I<sup>4</sup>, and a collar, I<sup>7</sup>, secured to rod I<sup>5</sup> by a set-screw, I<sup>8</sup>. Pivoted to frame A at I<sup>9</sup> is a bell-crank lever, I<sup>10</sup>, carrying a roller, I<sup>11</sup>,  
 30 which engages an incline on the type-bed, such as is indicated at H in dotted lines, Fig. 1. The rod I<sup>5</sup> is pivoted at one end to the toothed sector I<sup>2</sup> and at the other end to the bell-crank I<sup>10</sup>.

35 The mechanism just described serves to oscillate the shaft I and anything that may be attached to it through a given angle (and return through the same angle) depending upon the proportions of the parts for each double  
 40 excursion of the type-bed.

Secured to shaft I are two arms, K, into which is journaled a shaft, K'. Secured to shaft K' is a ratchet, K<sup>2</sup>. Pivoted to one of the frames A is a pawl, K<sup>3</sup>, engaging the  
 45 ratchet K<sup>2</sup>. Secured to shaft I are a series of yokes, L, in which are journaled a series of sleeves, L'. Secured to the sleeves L' are a series of worm-wheels, L<sup>2</sup>, engaging a series of endless worms, L<sup>3</sup>, which are in turn secured  
 50 to shaft K'. A series of fly-fingers, f, are secured in the sleeves L'. Said fingers are made of a circular cross-section, so that, as intermittently rotated, they shall present a new surface to the advancing sheet.

55 The object of the last-described mechanism is to slightly rotate the fly-fingers f for the delivery of each sheet, and to make this rotation so slight that sufficient time may elapse in the performance of one entire revolution for the  
 60 ink which may be deposited on said fingers from a sheet to have become dried, and thus to prevent said ink from being offset upon the sheet then to pass in contact with it on the surfaces of said fingers.

65 The operation is as follows: The shaft I, being caused to oscillate for each sheet printed through a sufficient angle to deposit a sheet

which has passed down in front of the fly-fingers f upon a suitable receiving-table, (not shown,) and to return at the proper time for  
 70 the reception of the succeeding sheet, carries with it the shaft K', the yokes L, endless worms L<sup>3</sup>, worm-wheels L<sup>2</sup>, ratchet K<sup>2</sup>, and fly-fingers f. The pawl K<sup>3</sup>, being pivoted to the frame A, and being also limited in motion  
 75 upon its pivot by a stop-pin, (not shown,) during these movements engages the ratchet K<sup>2</sup> and rotates it one tooth for each oscillation of the shaft I, and thus is slightly rotated, through the medium of the worms L<sup>3</sup>, worm-wheels L<sup>2</sup>,  
 80 and sleeves L', the series of fly-fingers f. As above described, therefore, the delivery-cylinders C and cords or tapes D<sup>2</sup> are kept clean by means of the cleansing and ink-absorbing covering F<sup>4</sup> of the shaft F, while the fly-fingers  
 85 present a new surface to each sheet, said fingers being rotated so slowly as to permit of any ink which may have been deposited upon them to become dried before the same surfaces of said fingers are again presented to a sheet,  
 90 and in this way the sheets are always delivered clean.

I do not confine myself to the method shown of oscillating the fly-shaft I and its attached mechanism, nor to that of rotating the fly-fingers f, nor to the mechanism described as attached to the fly-shaft I, for rotating said fly-fingers, as these operations may be performed in many well-known mechanical ways; nor do I confine myself to the method shown of rotating  
 95 and moving endwise the shaft F, with its absorbent covering, as these movements also may be performed in many other suitable ways best adapted to the various forms of printing-presses; but  
 100

As of my invention I claim—

1. In a printing-press in which the sheets are delivered by means of a delivery cylinder or cylinders, as C, which take the sheets from the impression-cylinder by means of grippers,  
 110 as g', a cleansing and absorbent rotary pad or roller, as F<sup>4</sup>, held in contact with said delivery cylinder or cylinders and automatically moved endwise for the purpose of cleansing and keeping the same clean, substantially as  
 115 set forth.

2. In a printing-press in which the sheets are delivered by means of a delivery cylinder or cylinders, as C, which take the sheets from the impression-cylinder by means of grippers,  
 120 as g', in combination with said cylinder or cylinders and tapes D<sup>2</sup>, a cleansing and absorbing rotary pad or roller, as F<sup>4</sup>, automatically moved endwise to present a new, unsoiled, or dried surface in contact with said cylinder and tapes  
 125 for the delivery of each sheet, substantially as set forth.

3. In a printing-press in which the sheets are delivered by means of a delivery cylinder or cylinders, as C, and tapes or cords, as D<sup>2</sup>,  
 130 in combination with said cylinders and tapes, a cleansing and absorbent pad or roller, as F<sup>4</sup>, held in contact with said delivery cylinder or cylinders and with said tapes or cords, and au-



tomatically moved to present a new, unsoiled, or dried surface in contact with the same for the delivery of each sheet, substantially as set forth.

5 4. In a printing-press, in combination with its delivery mechanism as part thereof, a series of oscillating and rotating fly-fingers coming in contact with the freshly-printed sides of the sheets, whereby an unsoiled surface of  
10 said fly-fingers is presented to each succeeding sheet, or a surface upon which the ink shall have had sufficient time to become dried before said surface is presented to a succeeding sheet, substantially as set forth.

15 5. In a printing-press in which the sheets are delivered by means of a delivery cylinder or cylinders, as C, and cords or tapes, as D<sup>2</sup>,

a cleansing or absorbent pad or roller, as F<sup>4</sup>, held in contact with said delivery cylinder or cylinders and with said tapes or cords, and automatically moved for each sheet, so as to present a new and unsoiled or dried surface in contact with said delivery cylinder or cylinders and with said tapes or cords, in combination with a series of oscillating fly-fingers, as f, automatically and slightly rotated, so as to present to each sheet an unsoiled or dried surface, whereby a clean delivery of said sheets is insured, substantially as set forth. 20 25

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Witnesses:

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