

1,324,437.

Patented Dec. 9, 1919.

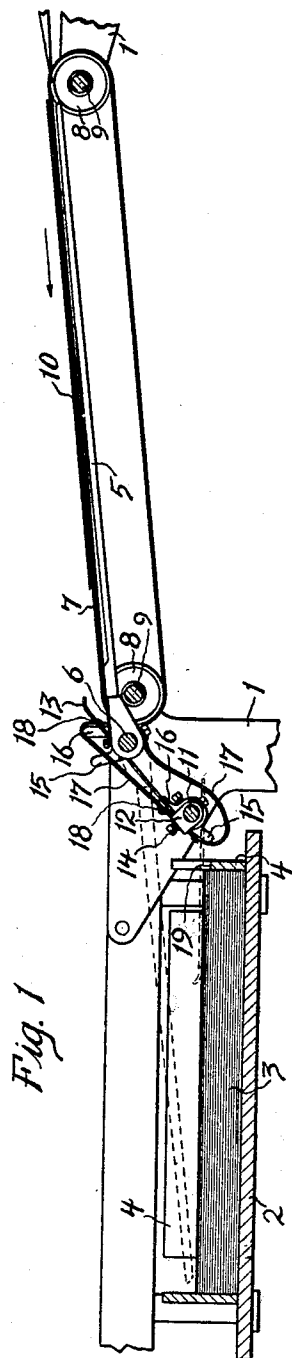


Fig. 1

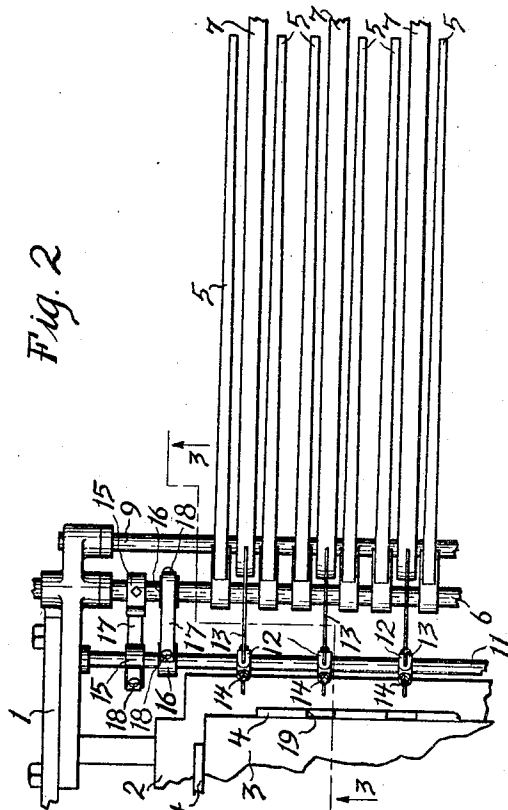


Fig. 2

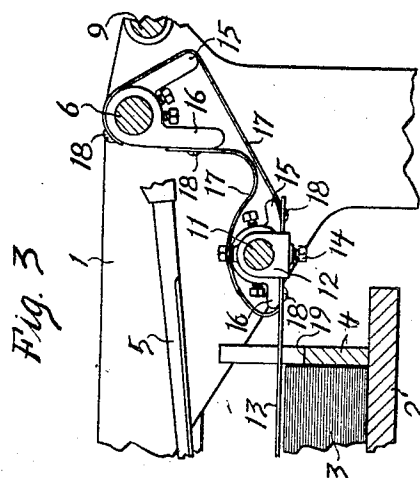


Fig. 3

Inventor:
 Alexander N. Smith
 By Miehle & Miehle.
 Attorneys.

UNITED STATES PATENT OFFICE.

ALEXANDER N. SMITH, OF CHICAGO, ILLINOIS, ASSIGNOR TO WILLIAM F. WHITMAN, OF CHICAGO, ILLINOIS.

FLY-SHEET DELIVERY.

1,324,437.

Specification of Letters Patent.

Patented Dec. 9, 1919.

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To all whom it may concern:

Be it known that I, ALEXANDER N. SMITH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fly-Sheet Deliveries, of which the following is a specification.

My invention relates to fly-sheet deliveries such as are used in delivering sheets from printing presses.

Sheet deliveries of this type deliver the sheet upon a delivery pile through the medium of a fly pivotally mounted for oscillatory movement, the fly receiving the sheet at one end of its stroke and carrying it to the other end of its stroke where it is delivered upon the delivery pile. The sheet as it is delivered is underneath the fly, being held there by the air pressure created by the movement of the fly, and when the fly initiates its return stroke the necessary quickness of this return movement creates a suction, especially at high speeds, which tends to and oftentimes does raise the sheet and allows it to float away from its delivered position to a position where the usual jogger blades lose control of the sheet to bring it back to its delivered position. More often the corners at the inner end of the sheet are caused to rise by the suction of the return movement of the fly and turn over upon the remainder of the sheet and settle down in this condition, while the next sheet is delivered. Thus unless the delivering of the sheets is constantly watched and corrected by hand or by the provision of some effective means for counteracting the effect of this suction of the sheet considerable spoilage occurs.

It is the main object of my invention to provide a simple effective automatic means to counteract this suction and thereby prevent spoilage from this cause, a supplemental object residing in the provision of such a device which may be easily applied to machines now in use and which is well adapted to perform its function under all circumstances.

The above objects and certain other objects hereinafter appearing are embodied in the preferred form of my invention hereinafter fully described and illustrated in the accompanying drawings, and are effected by certain novel constructions, combinations

and arrangement of parts particularly pointed out in the claims.

In the said drawings, Figure 1 is a vertical section in side elevation of a fly sheet delivery embodying my invention in its preferred form.

Fig. 2 is a partial top plan view of the same.

Fig. 3 is an enlarged partial view in side elevation on the line 3—3 of Fig. 2 showing the parts in a different position.

Like characters of reference indicate like parts in the various views.

In the drawings 1 designates the frame of the machine which supports the delivery board 2 upon which the pile of delivered sheets 3 are supported. The usual jogger blades 4 are mounted upon the board 2 and are actuated by the usual mechanism, not shown, to and away from the pile to pile the sheets uniformly.

The usual fly sticks 5 are secured to the rock shaft 6 which is pivotally mounted in the frame 1 some distance inwardly of the inner end of the pile, the fly sticks, as is usual, being spaced apart and extending in a common plane extending substantially radially with respect to the axis of the fly. On the side of the rock shaft 6 opposite the delivery board 2 are the conventional tapes 7 arranged between respective fly sticks for carrying the printed sheets from the press proper into position to be carried by the fly sticks, these tapes running over respective pulleys 8 mounted upon respective shafts 9 rotatably mounted in the frame 1 of the machine. The above mechanism is conventional and the usual mechanism, not shown, drives the tapes 7 constantly in a left hand direction in Fig. 1, see the arrow, so that the upper stretches of these tapes move toward the axis of the fly, and the fly is operated in an oscillatory path from the position, shown in full lines in Fig. 1, where the sticks 5 are positioned under the upper stretches of tapes 7 to allow the sheet, carried upon the upper stretches of the tapes, to move over the same, to the position indicated in dotted lines in Fig. 1 where the sticks have been turned over and are disposed over the delivery board 2 and pile 3. The oscillations of the fly are so timed that as the sheet reaches the proper point while carried by tapes 7 the delivering stroke of the fly is initiated and the fly lifts the sheet

off of the tapes and carries it to the end of this stroke over the pile. The movement of the fly is then reversed, the sheet being left on the top of the pile, and the fly returns to the position first mentioned to receive the next sheet preparatory to delivering it upon the pile 3 in a similar manner.

A shaft 11 is pivotally mounted in the frame 1 of the machine and is disposed between the axis of the fly and the adjacent end of the pile 3. Secured upon this shaft at intervals are sockets 12 into each of which a finger 13 is adjustably mounted, these fingers being slidably mounted in bores formed in the sockets and held in adjusted position by means of set screws 14 screw threaded into said sockets and engaging the fingers within the bores. The fingers 13 are supported on the sockets so that they are disposed substantially radially with respect to the axis of the shaft 11, and the sockets are arranged on the shaft so that the fingers lie in a common plane substantially radially with respect to the axis of the shaft and are so spaced that the fingers lie in registry with respective spaces between the sticks 5 whereby the hold down device, embracing shaft 11 and parts carried thereby, does not interfere with the fly.

The hold down device is so positioned with relation to the pile and fly that when in sheet holding down position the fingers 13 lie above and hold down a sheet delivered upon the pile 3, see dotted lines in Fig. 1, and when the holding down device is positioned out of sheet holding down position the fingers 13 are disposed out of the path of the sheet carried by the fly by reason of the disposition of the shaft 11 thereof.

Mechanism, now to be described, is provided which operates in timed relation with the fly and has connection with the hold down device and moves the same into and out of sheet holding down position in correspondence with the movements of the fly and is adapted to move the hold down device into sheet holding position and adapted to allow the same to remain stationary in its sheet holding position during a large part of the movement of the fly from its sheet delivering position. This mechanism preferably has connection with the fly and is a lost motion device whereby the hold down device is moved into and out of its sheet holding down position during the latter parts of the corresponding movements of the fly. This mechanism comprises a pair of arms 15, one of which is secured to the rock shaft 6 of the fly and the other of which is secured to the shaft 11 of the hold down device, a second pair of arms 16, one of which is secured to the rock shaft 6 of the fly and the other of which is secured to the shaft 11, and two flexible straps 17, each of which has its opposite ends secured to

respective of one pair of said arms by means of headed screws 18 passing through apertures in the straps and screw threaded into respective of the arms. The arms are so adjusted on their respective shafts and the straps are so arranged that the arms 15 and their connecting strap 18 transmit motion from the shaft 6 of the fly to the shaft 11 of the hold down device at the end of the delivering movement of the fly to move the hold down device into sheet holding down position, see Fig. 3, and the arms 16 and their connecting strap 18 transmit motion from the shaft 6 of the fly to the shaft 11 of the hold down device at the end of the return movement of the fly to move the hold down device out of holding down position, see Fig. 1, whereby no movement is transmitted to the holding down device during a large part of the movements of the fly and whereby the movements of the holding down device take place at the ends of the corresponding movements of the fly. Thus during the delivering movement of the fingers 3 are not moved into the path of the sheet carried by the fly until the sheet is ahead of these fingers, and during the return movement of the fly the fingers 3 are not moved from their sheet holding down position until the fly has completed a large part of its return movement and the suction created by this movement has lost its effect upon the sheet delivered upon the pile 2.

The drawings illustrate the frame 1 on one side of the press in which the shafts 6, 9, and 11 are mounted. However, these shafts are also supported by the frame 1 at their opposite ends, as is also the delivery board 2.

The inner jogger blade 2 has openings provided at intervals along the upper portion of the same to allow the fingers 3 to be moved into their sheet holding down position as indicated at 19.

It will be noted that by reason of the fact that the hold down device is mounted for movement independently of the fly it is possible to allow the same to remain stationary in its sheet holding down position for a relatively long period, and by reason of the fact that the holding down device is pivoted at a point between the axis of the fly and the adjacent end of the sheet the movement required to move the device into and out of sheet holding down position to allow the fly to deliver sheets is very short whereby the device is more easily operated, and that by the use of the lost motion actuating device from the fly the hold down device is easily and effectively operated, and that by the utilization of fingers in registry with the spaces between the fly sticks in addition to the simple structure of the whole device the operation and devices necessary are of a very simple character.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

1. A device of the character described including a pivotally mounted fly operating in an oscillatory path, a hold down device mounted to move independently of the fly and adapted to be moved into and out of position to lie above and hold down a sheet delivered by the fly upon a delivery pile and means operating in timed relation with the movements of the fly and having connection with the hold down device to move the same into and out of sheet holding down position in correspondence with the fly and adapted to move the hold down device into sheet holding down position while the fly is in its sheet delivering position and adapted to allow the said holding down device to remain stationary in its sheet holding down position during a large part of the movement of the fly from its sheet delivering position.

2. A device of the character described including a pivotally mounted fly operating in an oscillatory path, a hold down device pivotally mounted to move independently of the fly at a point between the axis of the fly and the adjacent edge of the pile upon which the fly delivers sheets and adapted to be moved into and out of position to lay above and hold down a sheet delivered by the fly upon the pile and a lost motion actuating device having connection with the fly and the hold down device to actuate the hold down device in timed relation with the fly and adapted to actuate the hold down device into and out of its sheet holding down position during the latter part of the corresponding movements of the fly.

3. A device of the character described including a pivotally mounted fly operating in an oscillatory path and including a series

of spaced sticks extending in a common plane substantially radially with respect to the axis of the fly, a hold down device pivotally mounted on an axis parallel to the axis of the fly and disposed at a point between the axis of the fly and the adjacent edge of the pile upon which sheets are delivered by the fly, said hold down device including spaced fingers extending in a common plane substantially radially with respect to the axis of the same and disposed to lie in registry with respective spaces between the sticks of the fly, and means operating in timed relation with the movements of the fly and having connection with the hold down device to move the same in correspondence with the fly and adapted to cause movement of the hold down device into and out of sheet holding position during the latter part of the corresponding movements of the fly.

4. A device of the character described including a pivotally mounted fly operating in an oscillatory path and including a series of spaced sticks extending in a common plane substantially radially with respect to the axis of the fly, a hold down device pivotally mounted on an axis parallel to the axis of the fly and disposed at a point between the axis of the fly and the adjacent edge of the pile upon which sheets are delivered by the fly, said hold down device including spaced fingers extending in a common plane substantially radially with respect to the axis of the same and disposed to lie in registry with respective spaces between the sticks of the fly, and a lost motion actuating device having connection with the fly and the hold down device to actuate the hold down device in timed relation with the fly and adapted to actuate the hold down device into and out of its sheet holding down position during the latter parts of the corresponding movements of the fly.

In witness whereof I hereunto affix my signature this ninth day of August, 1919,
A. D.

ALEXANDER N. SMITH.