

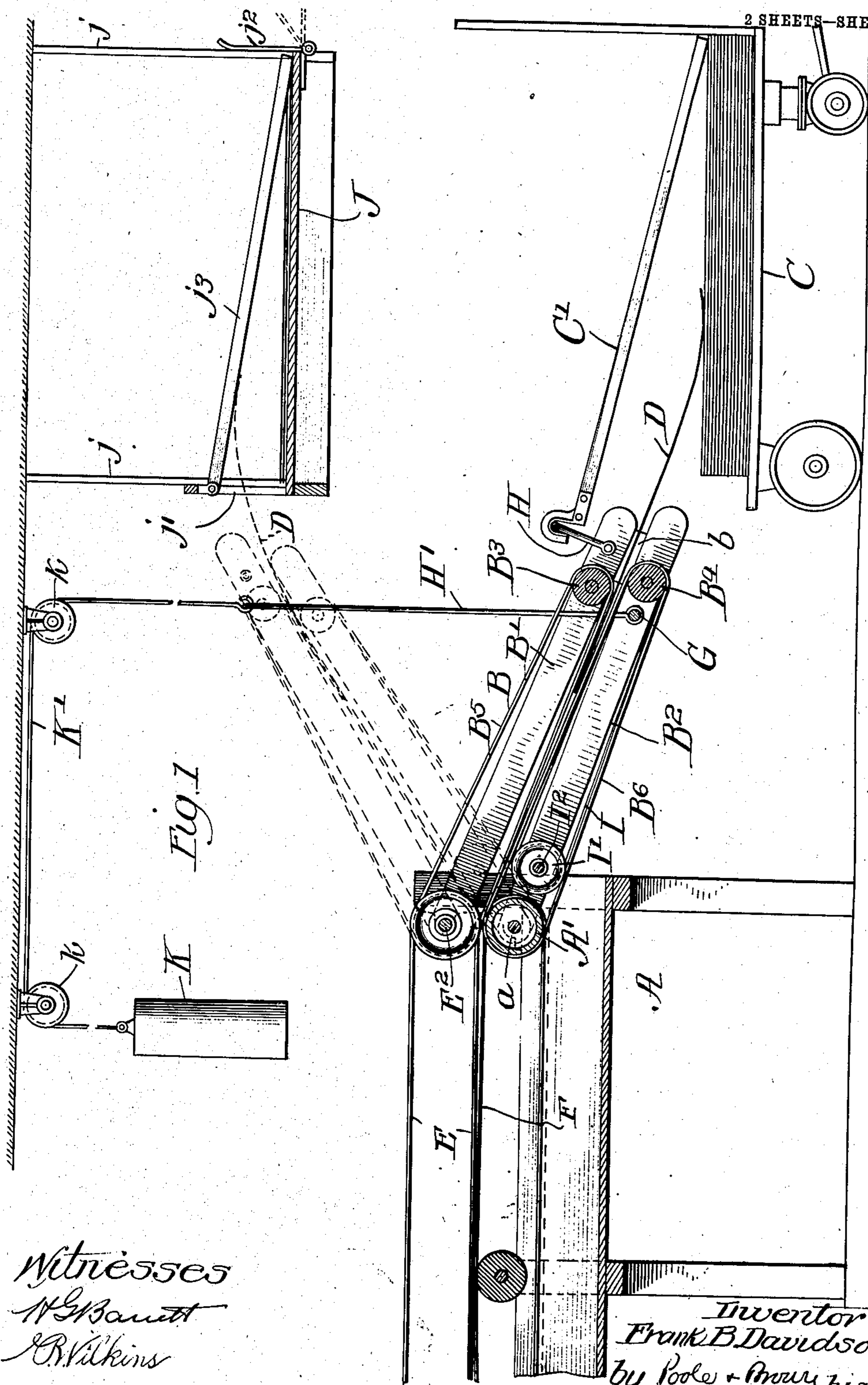
No. 815,008.

PATENTED MAR. 13, 1906.

F. B. DAVIDSON.  
PAPER DELIVERY.

APPLICATION FILED JULY 17, 1905.

2 SHEETS—SHEET 1.



Witnesses  
H. B. Bennett  
R. Wilkins

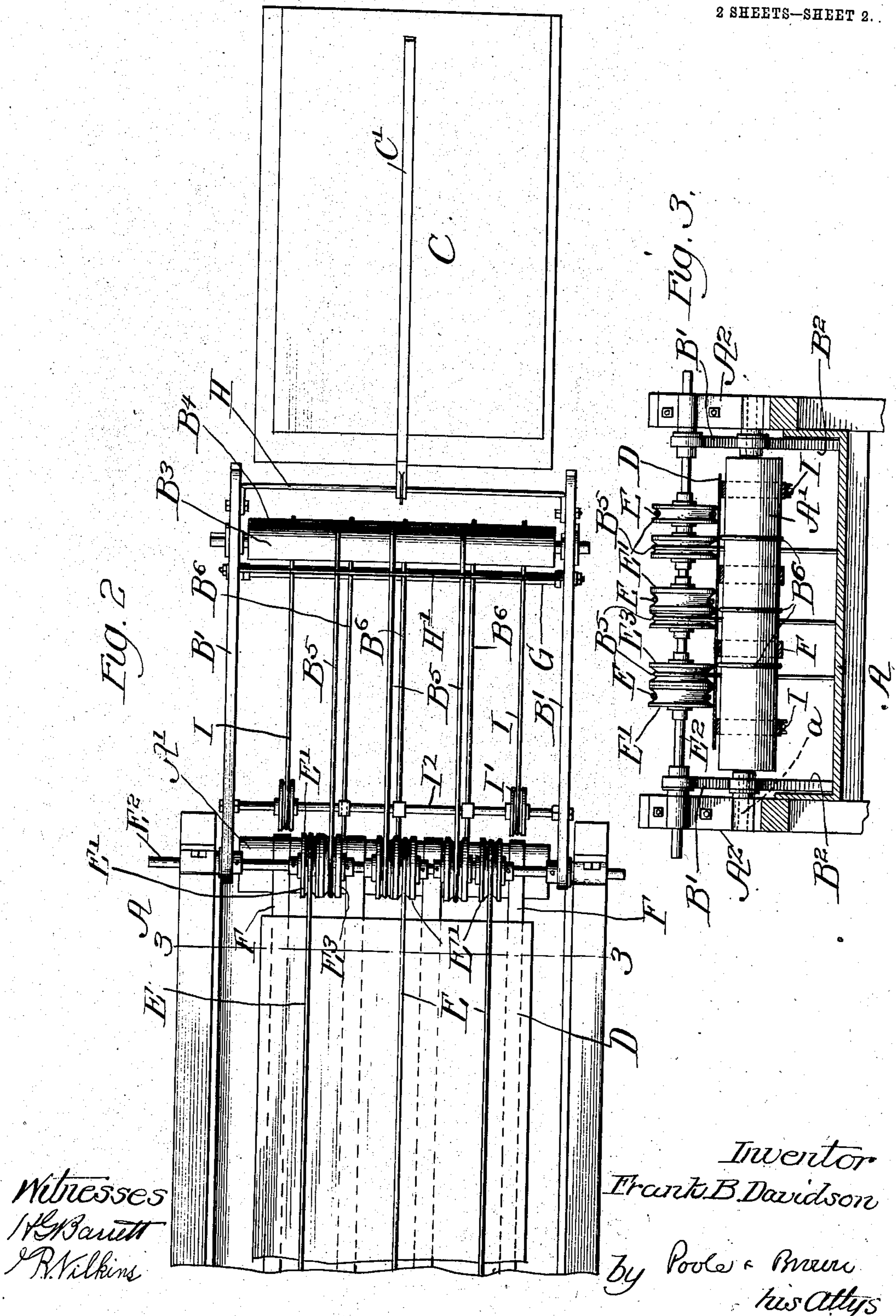
Inventor  
Frank B. Davidson  
by Poole & Moore his Attor.

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2 SHEETS—SHEET 2.



Witnesses  
H. Barrett  
R. Wilkins

Inventor  
Frank B. Davidson  
By Poole & Pomeroy  
his Attys

# UNITED STATES PATENT OFFICE.

FRANK B. DAVIDSON, OF MARSEILLES, ILLINOIS, ASSIGNOR TO HOWE AND DAVIDSON COMPANY, OF EAST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## PAPER-DELIVERY.

No. 815,008.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed July 17, 1905. Serial No. 270,089.

*To all whom it may concern:*

Be it known that I, FRANK B. DAVIDSON, a citizen of the United States, residing at Marseilles, in the county of Lasalle and State of Illinois, have invented certain new and useful Improvements in Paper-Deliveries; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a novel sheet-delivery device designed to receive sheets of paper, pasteboard, or the like from a machine in which the sheets are operated upon and to continuously deliver them upon receiving-surfaces located at different heights or levels.

An instance of the use of my improved delivery device is the application thereof to the discharge end of a machine for cutting sheets of determinate dimensions from a continuous web of paper or the like. It is often desired that sheets so discharged from such machine be delivered upon a truck by which the sheets in suitable piles or bundles are carried away from the machine. During the continuous operation of the machine one truck cannot be exchanged for another so quickly as to avoid a number of sheets being delivered upon the floor, thereby requiring extra handling. A delivery device made in accordance with my invention is mounted to swing vertically at its free end, and a shelf is provided above that part of the floor-space upon which the trucks are run to receive the sheets, so that in the interval between the time a filled truck is pulled away and an empty truck moved in position to receive the sheets the free end of the swinging delivery device is swung upwardly to deliver the sheets to said shelf, from which they may be removed in groups. Moreover, it is advantageous to gradually raise the outer end of the delivery device as the pile of sheets on the trucks increases in height, thereby properly delivering the sheets to the top of said pile.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a vertical sec-

tion of the delivery device made in accordance with my invention, illustrating also the machine in connection with which it is used and a truck upon which the sheets are delivered. Fig. 2 is a plan view of the parts shown in Fig. 1. Fig. 3 is a transverse section taken on line 3 3 of Fig. 2.

As shown in the drawings, A designates as a whole the discharge end of a suitable sheet-paper-working machine from which sheets of paper are continuously discharged, and B, Fig. 1, designates as a whole my improved sheet-delivery device.

C designates a movable truck or car upon which the sheets are delivered one by one and by which the bundles of sheets are removed from time to time.

The sheets D are discharged from the machine shown between upper and lower sets of belts or tapes E and F, respectively. The belts or tapes of the lower set F are trained at the end of the machine about a rotating roller A', the shaft *a* of which is mounted in standards A<sup>2</sup> A<sup>2</sup> at the sides of the machine. The tapes F are made flat, as herein shown. The upper set of tapes or belts are shown as made round and are trained over grooved pulleys E' E', mounted on a rotating shaft E<sup>2</sup>, that is rotatively mounted in the upper ends of the standards A<sup>2</sup>. The sheets D, of pasteboard or paper, are carried between the adjacent laps of the upper and lower sets of belts.

My improved sheet-delivery device comprises upper and lower sets of tapes or belts trained about front and rear rollers carried in upper and lower vertically-swinging frames and located in position to receive between the upper and lower sets of belts or tapes thereof the sheets discharged from the machine. The vertical swinging movement of said frames and coacting upper and lower sets of belts enables the sheets to be delivered at different levels. The structural details of said delivery device are shown as made as follows: The said frames carrying the upper and lower sets of belts comprise upper and lower side members B' B<sup>2</sup>, which are pivotally connected at their rear ends, respectively, with the shafts carrying the pulleys E' and roller A', respectively, in a manner to swing vertically. Said side frames carry at their outer ends horizontal upper and lower rollers B<sup>3</sup> B<sup>4</sup>, re-

spectively. The two side members of each frame are connected together in addition to the connection afforded by the shafts of the associated rollers by means of a rod G, extending transversely between and attached to the lower frame members, and an arched stay-rod H similarly connects the outer ends of the upper frame members. Said upper and lower members at each side of the delivery-device frame are held separated by means of distance-blocks  $b$ , attached to one of the members of each upper and lower pair and having sliding engagement with the members of the other pair.

$B^5$   $B^6$  designate, respectively, the upper and lower sets of belts or tapes associated with and constituting a part of the delivery device. The upper belts are trained about the upper outer roller  $B^3$  of the swinging frame and pulleys  $E^3$ , carried on the shaft  $E^2$  and adjacent to the pulleys  $E'$ . The lower belts or tapes are trained about the lower outer roller  $B^4$  of the frame and the roller  $A'$  of the main machine. The parts are so arranged that the adjacent laps of the delivery device tapes or belts of the upper and lower sets are parallel and substantially in contact with each other, and inasmuch as said belts are trained about the same pulleys and roller about which are trained the main carrying-belts of the machine at the discharge end of the latter the sheets of paper are directed from the belts  $E$   $F$  of the main machine between the belts or tapes of the delivery device. In order to prevent the outer margin of a wide sheet from sagging when passing through the delivery device, lower belts  $I$   $I'$ , supplemental to and located at the sides of the lower belts or tapes  $B^6$ , are trained about the front lower roller  $B^4$  of the device and about two pulleys  $I'$   $I'$ , fixed to a shaft  $I^2$ , which is rotatively mounted in the lower frame members  $B^2$  of the sheet-delivery device.

The sheets are delivered continuously to the truck C, and as the pile of sheets increases in height on said truck the vertically-swinging delivery device is moved upwardly. Preferably a guard rod or stick  $C'$  is loosely connected at one end with the bail H and rests at its other end on the pile of sheets in order to hold the sheets vertically in place while being delivered upon the truck. After a sufficient number of sheets have been delivered to the truck and before the truck is pulled away preparatory to placing another truck in position to receive the sheets the outer or swinging end of the delivery device is swung upwardly to the level of a shelf J, located above the space which receives the truck, and during the time required for placing an empty truck in position to receive the sheets the sheets are delivered to said shelf. After an empty truck is properly located to receive the sheets the delivery device is lowered, and

thereafter the group of sheets is removed from the shelf. Said shelf is herein shown as suspended from the ceiling by means of hangers  $j$ . The side of said shelf facing the delivery device is open, as shown at  $j'$ , to freely receive the sheets. At the other side of the shelf is located a swinging stop  $j^2$ , which arrests the sheets on the shelf and is adapted to be swung downwardly to permit removal of a group of sheets. A suitable guard  $j^3$  is pivoted at one side of the shelf and rests lightly at its other end upon the sheets, so as to hold the same vertically in proper position.

The said sheet-delivery device is preferably counterweighted to permit it to be swung from one position to another with the exertion of little power. The counterbalancing device herein shown consists of a suitable weight K, which is connected with the delivery device by means of a cable  $K'$ , trained about suitable guide-pulleys  $k$   $k$  and attached to a bail  $H'$ , which is hinged to the transverse tie-rod G, before referred to.

I claim as my invention—

1. The combination with a machine for operating on sheets of cardboard or the like, of a vertically-swinging delivery device hinged to the discharge end of the machine and embracing upper and lower frames which are separately pivoted to the machine-frame, upper and lower sets of traveling belts or tapes between the adjacent laps of which the sheets are received, and upper and lower sets of supporting pulleys or rollers for said belts associated with the said upper and lower frames; the pulleys or rollers at the inner or pivoted ends of the upper and lower frames being arranged concentrically with the pivotal axes of said frames.

2. The combination with a machine for operating upon sheets of cardboard and the like embracing upper and lower traveling belts or tapes between the adjacent laps of which the sheets are conveyed through the machine, and upper and lower rollers at the discharge end of the machine about which said belts or tapes are trained, of a sheet-delivery device comprising upper and lower vertically-swinging frames which are separately hinged to the machine-frame to swing on pivotal axes concentric with said upper and lower rollers, rollers carried by the outer ends of said swinging frames and upper and lower sets of endless belts or tapes trained about the rollers carried by the machine and frame and between which belts the sheets are received and thereby discharged.

3. The combination with a machine for operating upon sheets of cardboard and the like embracing upper and lower belts or tapes between the adjacent laps of which the sheets are conveyed through the machine, and upper and lower rollers about which said belts are trained, of a vertically-swinging delivery device at the discharge end of the machine

comprising upper and lower frames which  
are separately hinged to the machine-frame  
so as to swing on axes concentric with the  
said upper and lower rollers of the machine,  
5 rollers carried by the outer ends of said swing-  
ing frames, upper and lower endless belts or  
tapes trained about said inner and outer roll-  
ers, and between which the sheets are re-  
ceived and thereby discharged, a bail hinged  
10 to the outer end of the lower frame, a coun-

terbalancing-weight and a cable connecting  
said weight with the bail.

In testimony that I claim the foregoing as  
my invention I affix my signature, in pres-  
ence of two witnesses, this 10th day of July, 15  
A. D. 1905.

FRANK B. DAVIDSON.

Witnesses:

C. C. POOLE,

G. R. WILKINS.