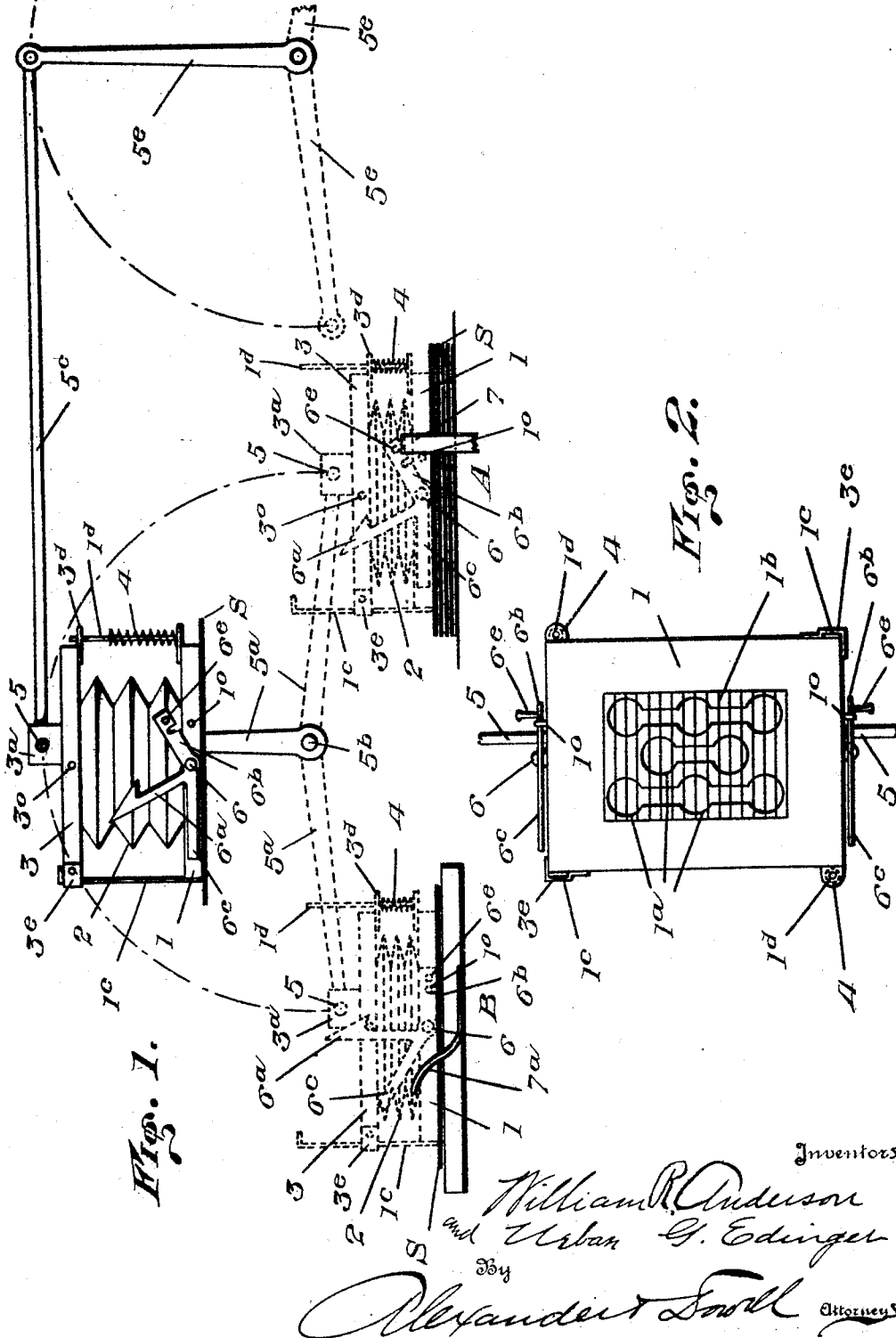


W. R. ANDERSON AND U. G. EDINGER.
SHEET FEEDING MECHANISM.
APPLICATION FILED JULY 28, 1920.

1,367,528.

Patented Feb. 8, 1921.



Inventors

William R. Anderson
and Urban G. Edinger

By

Alexander Small Attorney

UNITED STATES PATENT OFFICE.

WILLIAM R. ANDERSON AND URBAN G. EDINGER, OF KINGSTON, NEW YORK.

SHEET-FEEDING MECHANISM.

1,367,528.

Specification of Letters Patent.

Patented Feb. 8, 1921.

Application filed July 28, 1920. Serial No. 399,465.

To all whom it may concern:

Be it known that we, WILLIAM R. ANDERSON and URBAN G. EDINGER, citizens of the United States, residing at Kingston, in the county of Ulster and State of New York, have invented certain new and useful Improvements in Sheet-Feeding Mechanism; and we hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in apparatus for feeding sheets, or for separating sheets of paper from a pile of paper and delivering them to another point; such for example separating and feeding sheets from a pile of paper into position to be fed to the cylinder of a printing press.

The invention consists in a novel suction pickup apparatus adapted to pick up a sheet by suction and carry it to the point where the sheet is to be delivered and there release the sheet.

Preferably the pickup is so constructed that when it is lowered upon a pile of paper the suction member is automatically released so that when the pickup rises it will lift the top sheet of paper and carry it with it; and when the pickup is lowered with the sheet at the point of delivery the suction is released and the suction member rendered ineffective, so that when the pickup rises to return to the sheet pickup point the sheet is left lying upon the support to which it was transferred.

As the invention when understood may be embodied in various constructions it is not limited to the particular form illustrated in the accompanying drawings, though this is the at present preferred form of the device, and will be described in detail herein to enable others skilled in the art to understand and use the same. In the claims the novel features of construction and combination of parts for which protection is desired are set forth.

In said drawings Figure 1 is a view showing the pick up in elevation and carrying a sheet in full lines; and indicating in dotted lines its positions both at the sheet pick up point and also at the sheet delivery point.

Fig. 2 is a bottom plan view thereof.

As shown the pick up comprises a base plate 1, which may be of any suitable material but is preferably formed of a board

with a lower facing of metal. This base is perforated in any suitable manner, as shown at 1^a, through which suction may be created upon a sheet underlying the base when the suction device is operated. To prevent the sheet being drawn into the openings wires may be strung across the openings as indicated at 1^b, or other suitable means may be used.

Mounted upon the base 1 is a suction member, shown as a bellows, 2 the lower portion or mouth of which closes all the openings 1^a. The upper end of this bellows is attached to a top plate 3, which may correspond in form and size to the base 1. The top plate 3 is preferably movable toward and from the base 1 and may be guided in its movement by any suitable means. As shown guide rods or bars 1^c may be attached at their lower ends to the base 1 and engage eyes or loops 3^c attached to the top plate 3. Guide rods 1^d may be attached to the base 1 and engage eyes 3^d attached to the top 3, and springs 4 may be strung on the rods 1^d, so as to cushion the descent of the top plate, or compression of the bellows, and also cause the top plate to rise quickly when it is permitted to do it, and create suction by the expansion of the bellows.

The pick up may be operated back and forth between the sheet pickup point and the sheet delivery point, by any suitable means. As indicated the top plate may be provided with any suitable means for carrying the pickup and connected with any suitable means whereby the pickup may be moved from the point on table A, Fig. 1, where the sheets are to be picked up, to the point on table B, Fig. 1, where the sheets are to be delivered. The point A may be a pile of paper and the point B may be the feed board of a printing press, or other suitable device operating upon the sheets, not shown, and any suitable means may be employed for lifting the pickup at the table A and then moving it over to and lowering it upon table B, and then lifting it from the table B and moving it over to and lowering it upon the table A.

As shown the top plate is provided with eyes through which pass a rod 5, which is connected to levers 5^a pivoted at 5^b, upon suitable supports; and levers 5^a may be connected by a rod 5^c with similar levers or cranks 5^e which may be operated by any

suitable means (not shown) so as to cause the levers 5^a to swing and thus move the pickup in a semi-circular path from the table A to the table B and return.

5 When the pickup is lowered onto the table A it should be lowered with sufficient force to compress the bellows 2 and the springs 4, and thus exhaust the air from the bellows so that the springs 4 will throw up
10 the top plate, (on the initial working stroke of the pickup), and create a suction sufficient to cause a sheet S to adhere to the underside of the base 1 and be carried there-
15 with from the point A to the point B. At the point B the bellows is compressed so that the air is exhausted therefrom loosening the sheet from the plate, and the bellows is tem-
20 porarily locked in this compressed exhausted position when lowered upon the table B, by any suitable means, so that when the
pickup is lifted from the table B the sheet S is left lying thereon; and the locking device
is released when the pickup is next lowered
25 upon the table A. Thus on its next working stroke the pickup will lift a sheet from table A, as above described.

Any suitable automatically operable device may be employed for engaging and disengaging the bellows lock or catch.

30 As shown a three-armed lever is pivoted to the side of the base 1, at 6. This lever has a catch arm 6^a adapted to engage a pin or retainer 3° on the top plate 3 when the pickup is lowered on to the table B. Said
35 lever also has an arm 6^b which is adapted to engage a pin 1° on the base 1 when the pickup is lowered onto the table B and the catch engages the pin 3°. Arm 6^b also carries a pin 6° which is adapted to engage a
40 trip 7 attached to a suitable support adjacent the point A, so that when the pickup is lowered at the point A the pin 6° engaging trip 7 causes the lever to turn and dis-
engage latch 6^a from the pin 3°, so that
45 upon the next raising of the pickup the bellows can open and create sufficient suction to pick up and carry away the top sheet of paper S, as described.

The catch lever also has arm 6° which is
50 adapted to engage a trip member 7^a attached to a suitable support adjacent the point B so that as the pickup is lowered onto the table B the arm 6° of the lever en-
gages the trip 7^a and causes the catch 6^a to
55 engage the pin 3°. The trip 7^a is preferably a spring trip so that it will yieldingly engage the arm 6°. On the base 1 is a stop
lug or finger 1^s adapted to engage the arm 6° and limit the opening movement of the
60 catch.

Operation.

As indicated in Fig. 1 the pickup is moved from the table A to the table B on
65 an arcuate or semi-circular path. When it

is lowered onto the table A the bellows is compressed and the catch 6^a is disengaged, and on the lifting of the pickup the bellows creates a suction which causes the top sheet S to adhere to the bottom of base 1 of
70 the pickup; and such sheet is carried by the pickup from the table A over to and lowered onto the table B. As it is lowered upon the table B the bellows is compressed and releases the paper, and the bellows is
75 locked in compressed position by the catch 6^a, so that on the return movement of the pickup from the table B, the bellows creates no suction and the sheet S is left lying upon the table B; but when the pickup is
80 again lowered onto the table A and the surface of the base 1 rests upon the sheet, the latch is disengaged and consequently when the pickup again rises the bellows creates a suction and another sheet is picked up and
85 carried over to table B.

What we claim is:

1. In mechanism for feeding or transferring sheets of paper, a sheet pickup comprising an expansible and contractible suction device; means moving the pickup back and forth from the point of pickup to the point of delivery, and means for releasing the suction device and permitting it to expand at the point of pickup, and for holding the
95 expansion device contracted at the point of delivery.

2. In mechanism for feeding or transferring sheets of paper, a pickup comprising a perforated plate and a bellows connected
100 therewith, means for moving the pickup back and forth from the point of pickup to the point of delivery and means for releasing the bellows at the pickup point so as to create suction when it moves therefrom; means for
105 contracting the bellows at the delivery point to release the sheet, and means for locking the bellows against expansion when it is moved from the delivery point.

3. In mechanism for feeding sheets of
110 paper, a sheet pickup comprising a bellows, a latch for locking the bellows, and means whereby the latch is caused to release the bellows at the sheet taking point and to lock the bellows in compressed position at
115 the sheet delivery point.

4. In mechanism for feeding sheets of paper, a sheet pickup comprising a perforated base plate, a bellows connected there-
120 with, a latch for locking the bellows, and means at the sheet taking point and the sheet delivery point adapted to cooperate with the latch whereby the bellows is released at the sheet taking point and is locked in compressed position at the sheet delivery
125 point.

5. A sheet pickup for sheet feeding apparatus; comprising a perforated plate, a contractible and expansible suction member connected therewith; means for moving the
130

pickup device from the point of pickup to the point of delivery; and means whereby the suction member is released when the pickup is lowered upon a sheet at the pickup point so that when it is again raised it will expand and lift the sheet by suction.

6. In combination with a pickup as set forth in claim 5, means for releasing the sheet at the delivery point.

7. A sheet pickup and sheet feeding apparatus comprising a perforated plate; a contractible and expansible suction member connected therewith; means whereby the suction member is released when the pickup is lowered upon a sheet so that when it is again raised it will expand and lift the sheet by suction; and means whereby when the pickup is next lowered the suction member is contracted and locked, so that when the pickup is again raised it will release the sheet.

8. In combination with a pickup as set forth in claim 7, means for moving the pickup from the sheet pickup point to the sheet delivery point; means for locking the suction member in contracted position when the pickup is lowered at the delivery point; and means for releasing the suction member when the pickup is lowered at the sheet taking point.

9. A sheet pickup comprising a perforated base plate, a bellows connected therewith; a latch for locking the bellows and means at the sheet taking point and at the sheet delivery point adapted to respectively cooperate with the latch; whereby the bellows is released at the sheet taking point and is locked in compressed position at the sheet delivery point.

10. In combination a sheet pickup comprising a perforated base plate, a bellows connected therewith, means for moving the pickup device from the sheet pickup point to the sheet delivery point; a latch for locking the bellows and means adapted to engage the latch at the sheet taking point

and cause it to hold the bellows in compressed position when the pickup is lowered at the sheet delivery point; and means at the sheet taking point adapted to engage the latch and release the bellows when the pickup is lowered at the sheet taking point.

11. In mechanism for feeding or transferring sheets of paper, a contractible and expansible pickup, means for moving the pickup back and forth from the point of pickup to the point of delivery; means for releasing the pickup at the pickup point so as to create suction when it moves therefrom; means for contracting the pickup at the delivery point to release the sheet; and means for locking the pickup against expansion when it is moved from the delivery point.

12. In mechanism for feeding or transferring sheets of paper; a sheet pickup comprising a perforated plate and a bellows connected therewith; means for moving the pickup back and forth from the point of pickup to the point of delivery, said pickup being adapted when lowered upon a pile of sheets of paper to automatically create sufficient suction when lifted to pick up an underlying sheet and remove it with the pickup; and means to cause the pickup to release the sheet at the point of delivery of the sheet.

13. In mechanism for feeding or transferring sheets of paper; a bellows sheet pickup; means for moving the pickup back and forth from the point of pickup to the point of delivery; means for releasing the bellows at the pickup point so as to create suction when it moves therefrom; means for contracting the bellows at the delivery point to release the sheet; and means for locking the bellows against expansion when it is moved from the delivery point.

In testimony that we claim the foregoing as our own, we affix our signatures.

WILLIAM K. ANDERSON.
URBAN G. EDINGER.