

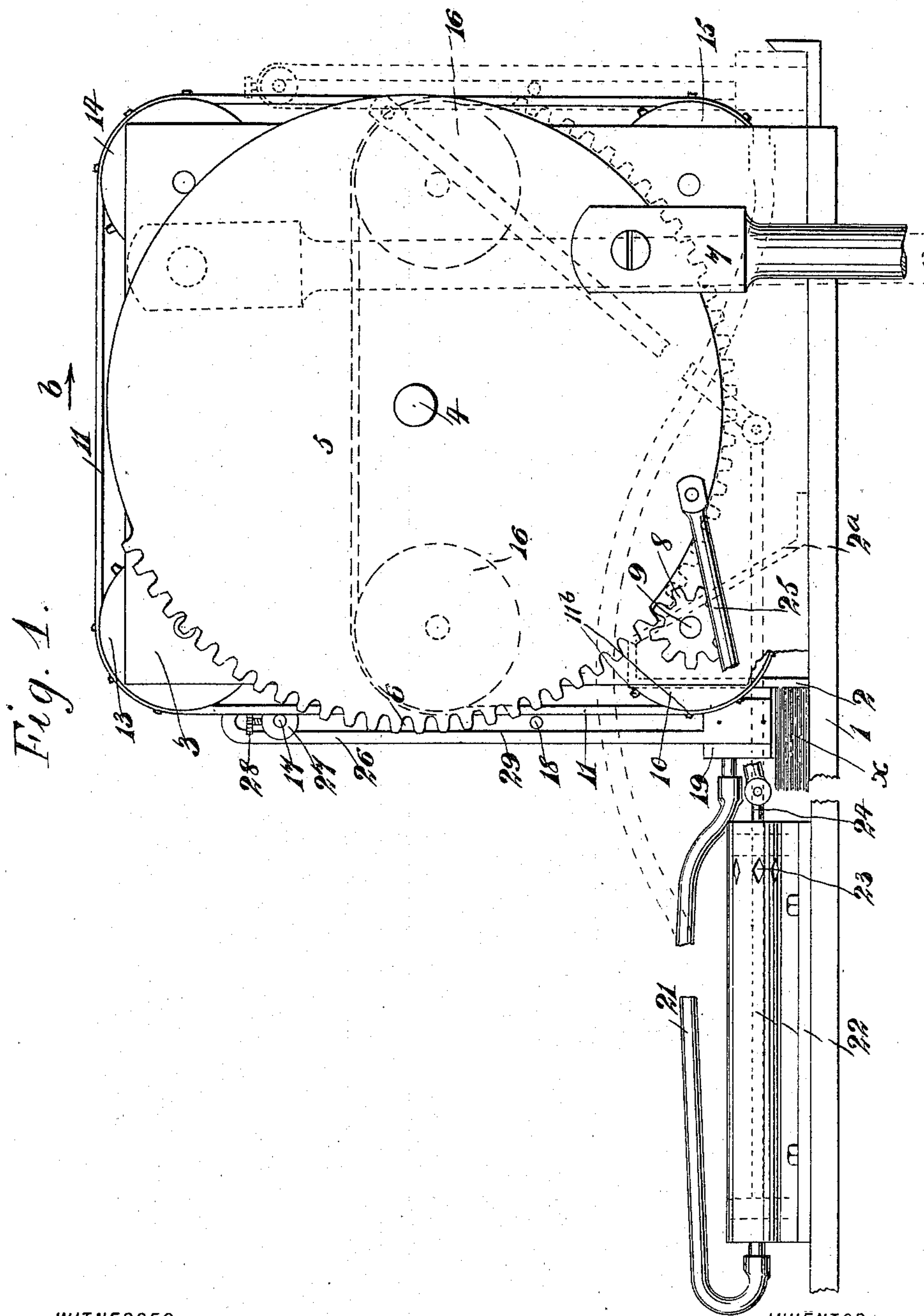
(No Model.)

2 Sheets—Sheet 1.

G. B. WURTZ.
SHEET FEEDER.

No. 573,952.

Patented Dec. 29, 1896.



WITNESSES:

Henry A. C. Kellier.
J. B. Sandwinger

INVENTOR

G. B. Wurtz.

BY

Mumy

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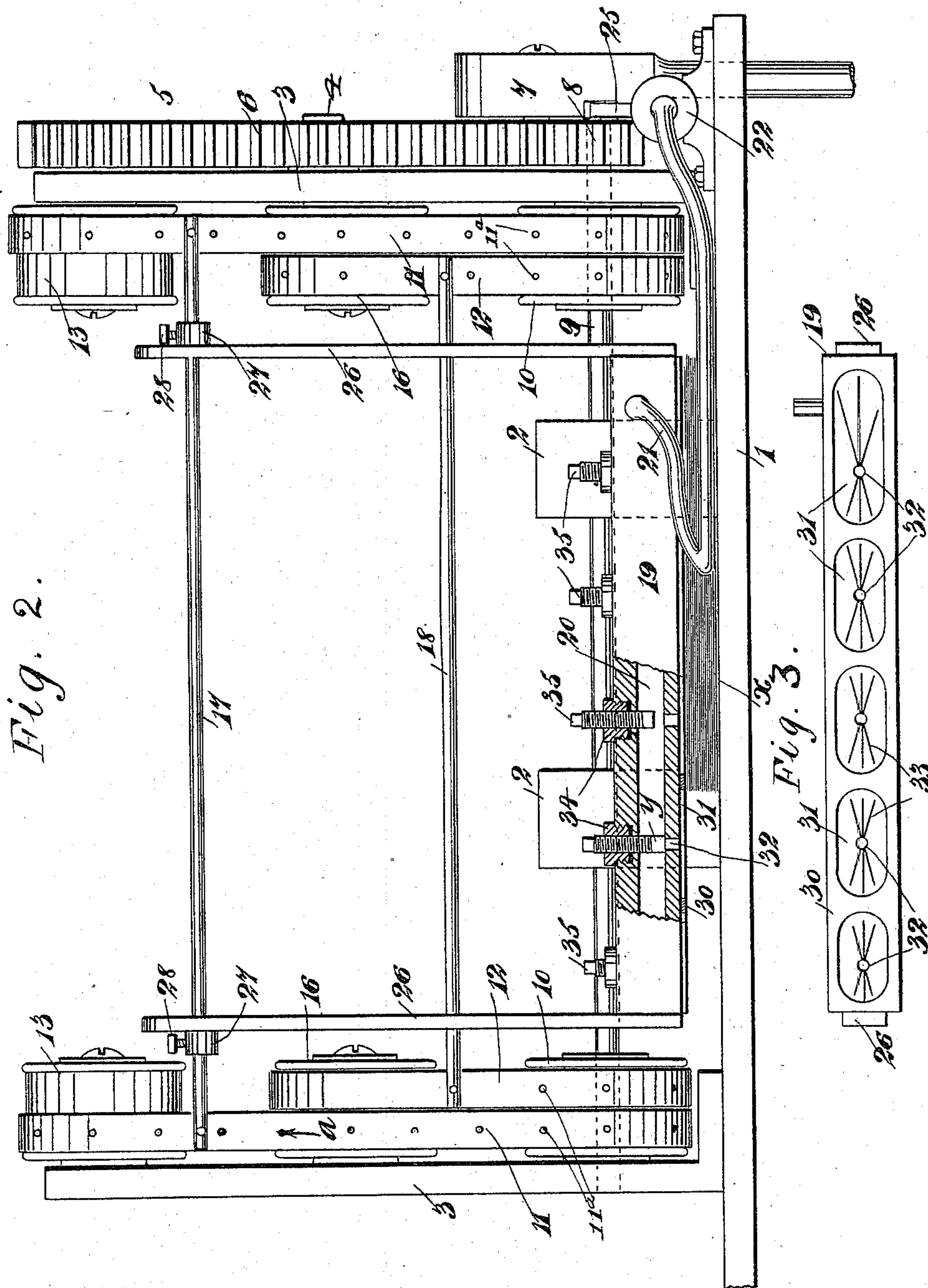
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

GEORGE B. WURTZ, OF SHREVEPORT, LOUISIANA.

SHEET-FEEDER.

SPECIFICATION forming part of Letters Patent No. 573,952, dated December 29, 1896.

Application filed March 3, 1896. Serial No. 581,626. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BLEY WURTZ, of Shreveport, in the parish of Caddo and State of Louisiana, have invented a new and Improved Sheet-Feeder, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in that class of sheet-feeders which are adapted for feedingsheets of paper or the like, as, for example, to printing-presses or paper-folders; and the object of the invention is to provide a device of this character of a simple and inexpensive construction which shall be rapid and certain in its operation and not liable to become deranged and broken while in use, and which shall, moreover, be capable of feeding sheets of paper or the like of different sizes.

The invention consists in a sheet-feeder comprising a suction-bar having means for exhausting the air therefrom, an endless carrier upon which the suction-bar is mounted, a blank-platform to receive the sheets to be fed, and means for actuating said endless carrier to cause the suction-bar to move from and toward the blank-platform.

The invention also contemplates certain novel features of the construction, combination, and arrangement of the various parts of the improved sheet-feeder, whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use than various other similar devices heretofore employed, all as will be hereinafter fully set forth. The novel features of the invention will be carefully defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side view of a sheet-feeder constructed in accordance with my invention. Fig. 2 is a front view thereof, a portion of the suction-bar being shown in section; and Fig. 3 is an under side plan view showing the suction-bar detached.

In the views, 1 indicates a suitable bed-frame or table the central portion of which forms, as shown in Figs. 1 and 2, a blank-platform adapted to receive a pile of blanks or sheets to be fed by the sheet-feeder, and

at opposite sides of one end of said bed-frame or table 1 are formed side plates 3, extending up from the upper face thereof, a short shaft or stud 4 being mounted on one of the said plates and adapted to receive a wheel or disk 5, having on its periphery a segmental gear-face 6 and driven by means of a pitman or plunger 7 from some suitable actuating device, which may be one of the moving parts of a printing-press or folding-machine.

The table 1 is provided with adjustable stops 2, as clearly shown in the drawings, to hold the sheets or blanks in place thereon, said stops being provided with downwardly-inclined rear portions 2^a, adjustably secured to the said table or bed-frame, as clearly shown in dotted lines in Fig. 1.

The segmental gear-face 6 of the wheel or disk 5 is arranged to gear with a pinion 8, secured on the outer end of a shaft 9, journaled in the side plate 3, whereon the shaft or stud 4 is mounted, and said shaft 9 extends transversely across the frame or table of the feeder, having its opposite end journaled in the opposite side plate 3 thereof, as clearly shown in Fig. 2. On the ends of the shaft 9, inside the side plates 3 of the frame or bed-plate, are secured pulleys or sheaves 10, having grooved peripheries, over each of which pulleys are adapted to run belts 11 and 12, arranged side by side, the belts 11 being of greater length than the belts 12, as clearly shown in Fig. 2.

The belts 11 extend up over grooved pulleys or sheaves 13 and 14, (having pins 11^b, engaging perforations 11^a in said belts,) journaled on short shafts at the forward and rear upper corners of the side plates 3 of the frame, as clearly shown in Fig. 1, and at the rear lower corners of the side plates 3 of the frame are mounted to turn other grooved pulleys or sheaves 15, similar to the pulleys or sheaves 10. The shorter belts 12 do not extend over the upper pulleys or sheaves 13 and 14, but are arranged to pass over other sheaves or pulleys 16 (shown in dotted lines in Fig. 1) and arranged about midway between the pulleys 10 and 15 at the lower part of the side plates and the pulleys 13 and 14 at the upper part of the side plates 3.

A rod or bar 17 is secured at its end portions to the belts 11 and extends transversely across the space between said belts, and a

similar rod 18, of less length than the rod 17, is secured to the shorter belts 12 in a similar way below said rod 17. A suction-bar 19 is mounted on and carried by the rods 17 and 18, being provided with a hollow or chamber 20, formed interiorly in it, and said hollow is in communication by way of a rubber tube 21 or the like with an air-exhausting device 22, comprising a cylinder having air-ports at one end, as shown at 23, and provided with a piston mounted to reciprocate in it and held on a piston-rod 24, the end of which is connected by means of a link or connecting-head 25 with the disk or wheel 5, as clearly shown in Fig. 1.

The suction-bar 19 is supported on the rods or bars 17 and 18 by means of vertical arms 26, secured to it at its ends at their lower portions and having their upper portions slotted, as indicated at 29 in Fig. 1, to receive at the upper portions of said slots blocks 27, having set-screws 28 and adapted to be clamped thereby upon the opposite end portions of the upper rod or bar 17, uniting the belts 11. The rod 18, uniting the belts 12, extends through the lower portions of the slots 29 in the arms 26.

The suction-bar 19 is provided on its under side with a facing or cushion 30, of rubber or equivalent elastic material, having apertures 31 formed in it at suitable points, and each of said apertures is in communication with a duct 32, formed through the bottom of the suction-bar and extending into the hollow or chamber 20 thereof, said duct 32 being in communication with grooves or channels 33, formed in the bottom of the suction-bar within the openings 31 in the cushion 30 and radiating from said ducts, as clearly shown in Fig. 3. The grooves or channels 33 form air-spaces from which the air is exhausted through the ducts 32 in such a way as to increase the suction upon the sheets. Opposite the ducts 32 are formed in the top of the suction-bar 19 interiorly-screw-threaded openings adapted to receive screw-plugs 34, forming stuffing-boxes, as clearly shown in Fig. 2, and said plugs are likewise provided with interiorly-threaded openings which receive threaded stems or bolts 35, having their lower ends adapted to form valves which when turned will move down and close the ducts 32 in the bottom of the suction-bar, as indicated at γ in Fig. 2.

The rods or bars 17 and 18 are spaced apart from each other a distance substantially equal to the distance of the upper portion of the periphery of one of the rollers 13 or 14 from the upper portion of the periphery of one of the rollers 16, whereon the belts 12 are carried, and the arms 26 of the suction-bar will be by preference capable of a certain degree of vertical movement on said rods or bars 17 or 18, this being provided for by making the slots 29 in said arms of sufficient length so that when the suction-bar 19 is in its lowered position it will always rest at its lower cushioned portion upon the upper surface of the pile of blanks x on the blank platform or table.

In operation the wheel or disk 5 has imparted to it by means of the pitman 7 partial rotation alternately in opposite directions, whereby it will be seen that the belts 11 and 12 will likewise be driven alternately in opposite directions, owing to the gearing above described; and said belts will be moved equal distances. As the wheel or disk 5 moves in one direction it will be seen that the rods or bars 17 and 18 will be first moved upward, as indicated by the arrow a in Fig. 2, so as to lift the suction-bar off from the pile of blanks x , the air-exhausting device connected to said suction-bar having been previously actuated to exhaust the air therefrom, so that the upper sheet on the blank-platform will be caused to adhere to the cushioned under side of the suction-bar and will be raised thereby. As the turning of the wheel or disk 5 continues the rods or bars 17 18 will pass onto the horizontal upper portions of the belts 11 and 12 and will move rearwardly, as indicated by the arrow b in Fig. 1, carrying the suction-bar and the sheet held thereby, and said bars or rods will eventually move down the rear vertical portions of the belts 11 and 12 and will assume the position indicated in dotted lines in Fig. 1, the vacuum being at this movement broken in the suction-bar by the passage of the piston in the exhausting device beyond the air-ports 23 of the cylinder thereof. At the delivery end of the sheet-feeder may be arranged any suitable device to receive the sheets, as, for example, a pair of gripping-rollers or a platform or the like whereon said sheets may be deposited.

Where sheets of less width than the length of the suction-bar 19 are to be fed, it is evident that one or more of the ducts 32 in the bottom of the bar may be closed, as indicated at γ in Fig. 2, so that the vacuum formed within the chamber 20 of the suction-bar will act only through the ducts 32, which are left open on the sheets x . Otherwise it will be obvious the vacuum in the suction-valve could not be secured.

From the above description of my improved sheet-feeder it will be seen that the device is of an extremely simple construction and is especially well adapted for use, since it is positive and rapid in operation and not liable to become deranged while in use, and it will also be obvious from the above description that the device is susceptible of considerable modification without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the exact form and arrangement of the parts herein set forth.

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

1. In a sheet-feeder, the combination of a frame having a blank-platform, two endless carriers mounted thereon and adapted to move in parallel planes, a suction-bar supported and moved by the carriers, and means

for exhausting the air from said suction-bar, substantially as set forth.

2. In a sheet-feeder, the combination of a frame having a blank-platform, two sets of
5 endless carriers mounted to move thereon in parallel planes, the carriers of each set being opposite each other, rods extending between the carriers of each set, and a suction-bar
10 having arms guided on said rods and provided with means for exhausting the air therefrom, substantially as set forth.

3. In a sheet-feeder, the combination of a frame having a blank-platform, two series of
15 endless belts mounted to move in parallel paths on the frame, the belts of each set being opposite each other and those of one set being inside the belts of the other set, rods extend-
20 ing between the belts of each set, a suction-bar having arms guided on said rods and adapted to be moved by said belts, and means
for exhausting the air from the suction-bar, substantially as set forth.

4. In a sheet-feeder, the combination of a frame having a blank-platform, two series of
25 endless belts mounted to move in parallel paths on the frame, the belts of each set being opposite each other and those of one set being

inside the belts of the other set, rods extend-
ing between the belts of each set, a suction-
bar having arms guided on said rods and
30 adapted to be moved by said belts, means for exhausting the air from the suction-bar, and means for moving said belts alternately in
opposite directions, substantially as set forth.

5. In a sheet-feeder, the combination of a
35 frame having a blank-platform, two sets of endless carriers mounted to move thereon in parallel planes, said carriers having support-
ing sheaves and having their end portions ar-
40 ranged vertically to the blank-platform and their side portions arranged at right angles to their ends, the carriers of each set being op-
posite each other, and those of one set being inside the carriers of the other set, rods ex-
45 tending across the space between the carriers of each set, means for moving said carriers in opposite directions, and a suction-bar hav-
ing arms guided on said rods and provided with means for exhausting the air therefrom, substantially as set forth.

GEORGE B. WURTZ.

Witnesses:

CHARLES DAVIS,
CLAIBE B. SCOTT.