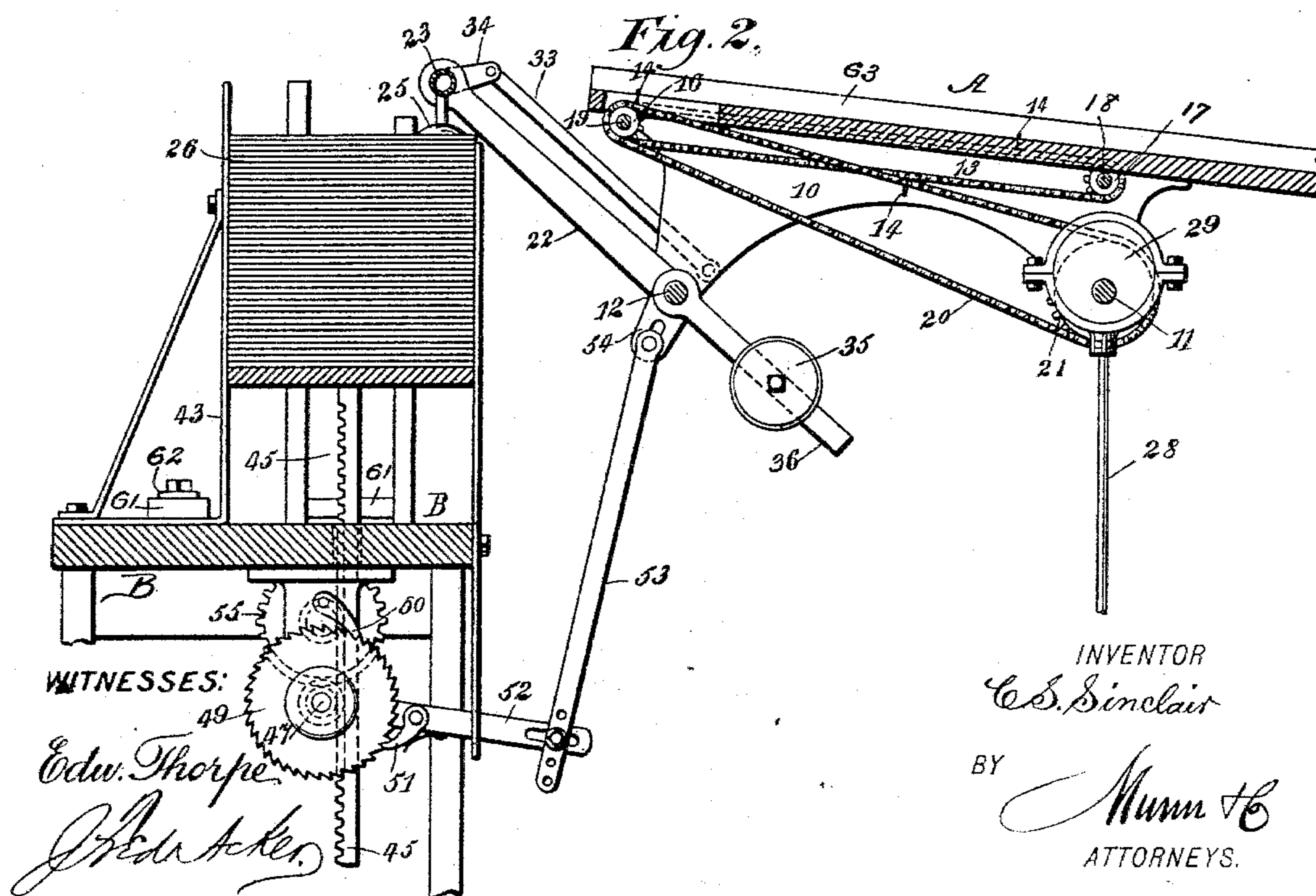
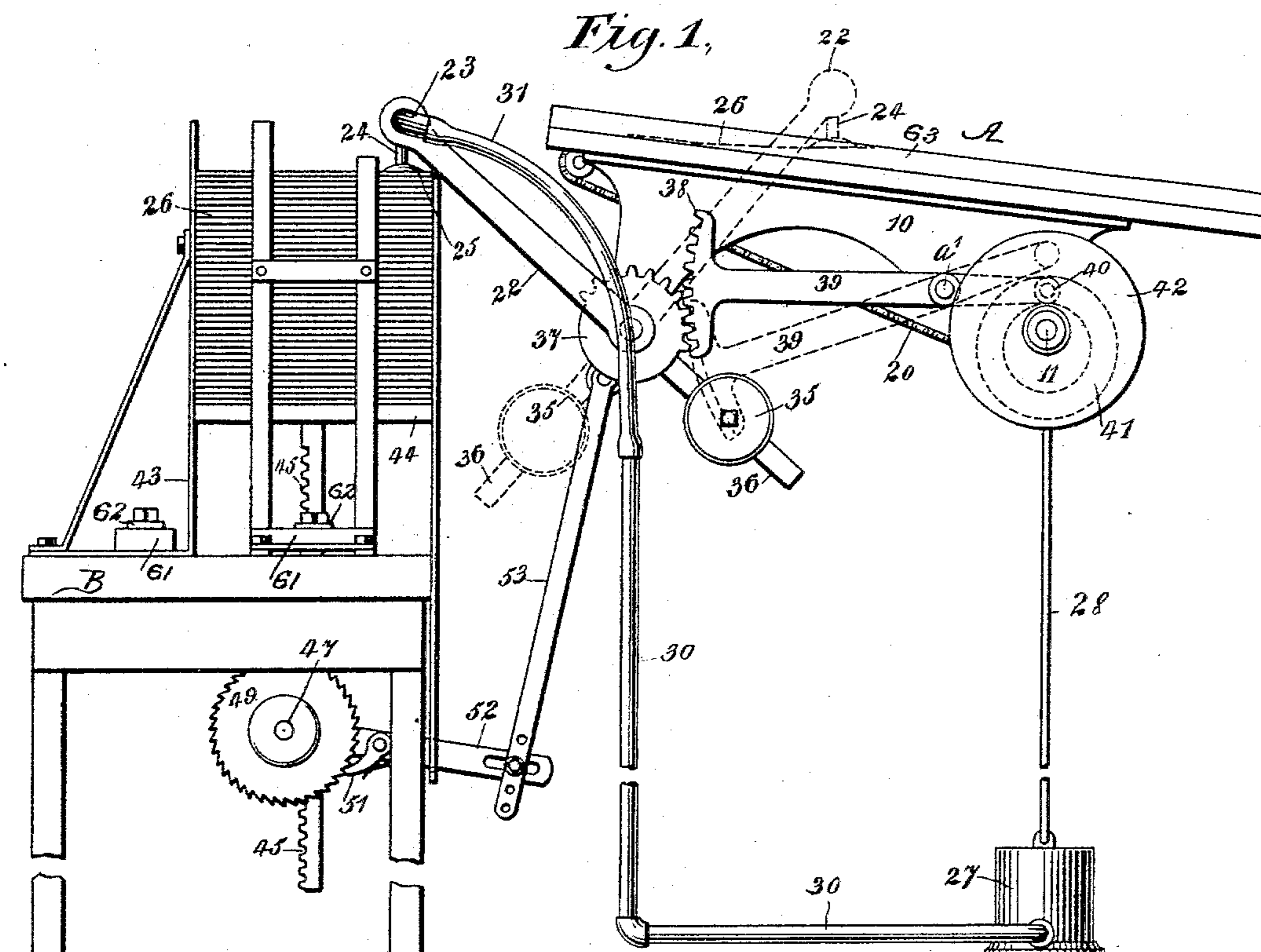


2 Sheets—Sheet 1.

FEED ATTACHMENT FOR PRINTING PRESSES.

No. 571,699.

Patented Nov. 17, 1896.



(No Model.)

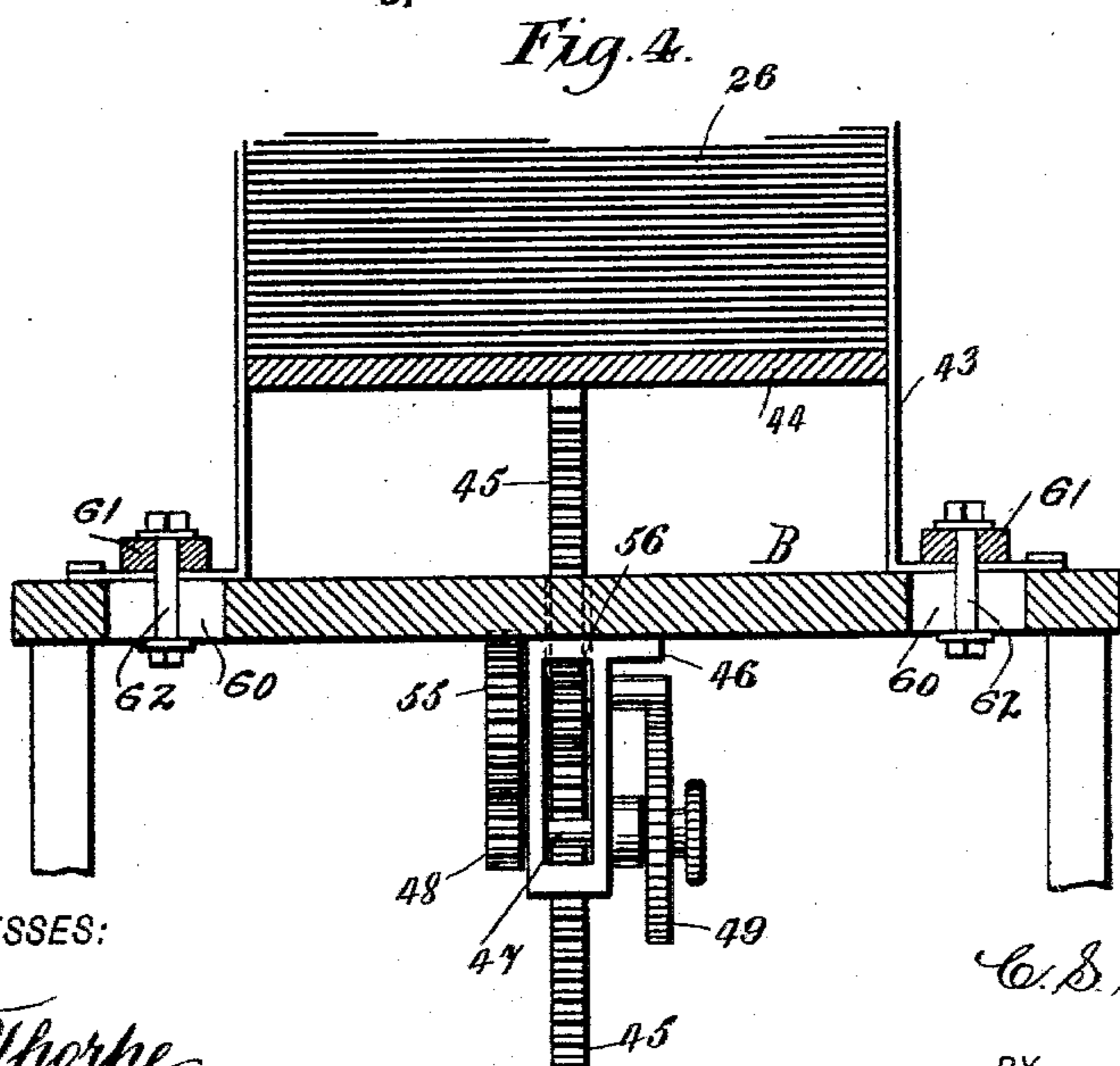
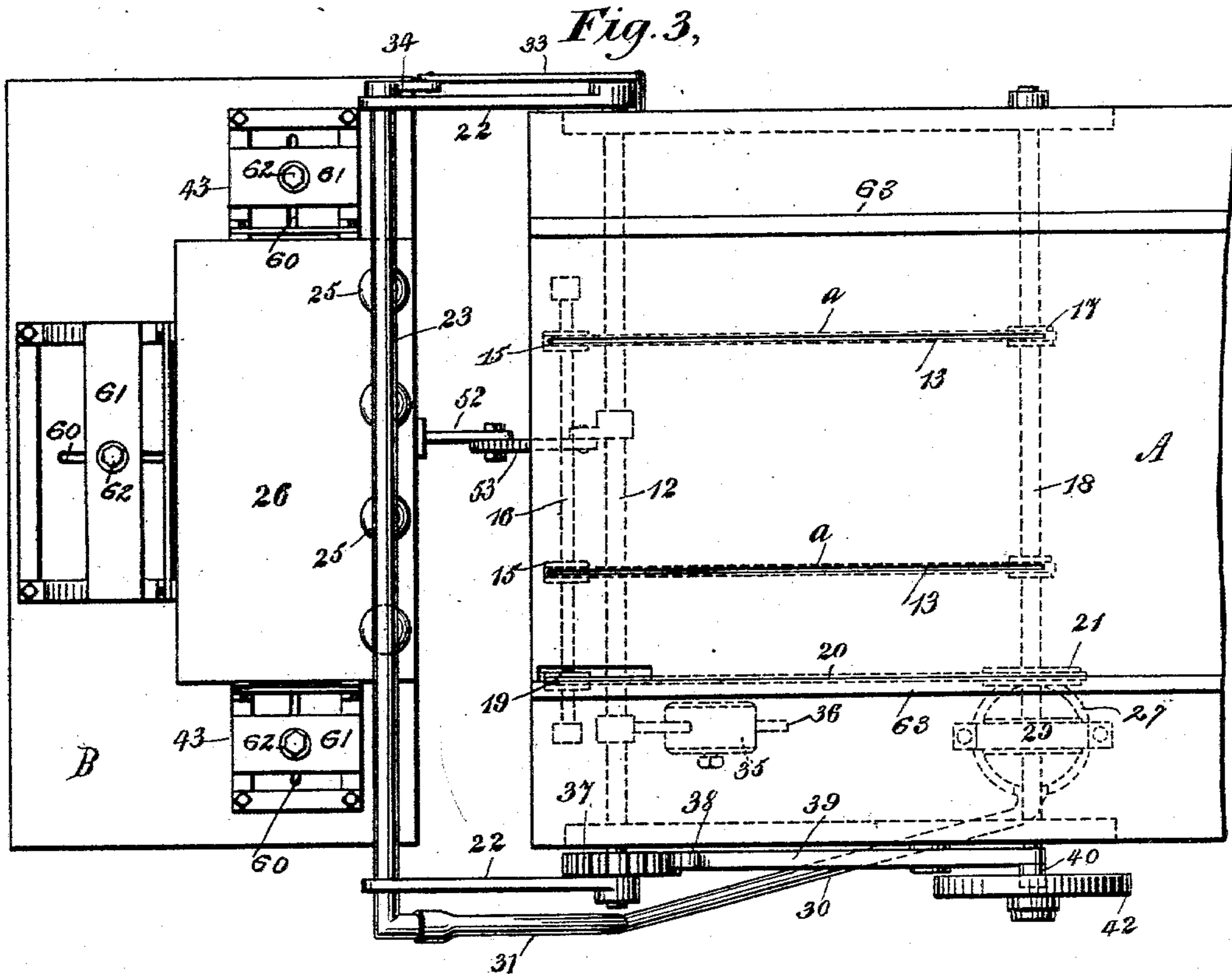
2 Sheets—Sheet 2.

C. S. SINCLAIR.

FEED ATTACHMENT FOR PRINTING PRESSES.

No. 571,699.

Patented Nov. 17, 1896.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

CHARLES S. SINCLAIR, OF CINCINNATI, OHIO.

## FEED ATTACHMENT FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 571,699, dated November 17, 1896.

Application filed July 17, 1895. Serial No. 556,262. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES S. SINCLAIR, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and Improved Feed Attachment for Printing-Presses, of which the following is a full, clear, and exact description.

My invention relates to a feed attachment for printing-presses; and it has for its object to provide an attachment applicable to the feed-table of any printing-press, so constructed that the sheets will be picked up from the pile and automatically placed in position on carriers located on the feed-table, to be delivered to the take-up mechanism of the press or to the feeder thereof; and another object of the invention is to provide a means whereby the sheets to be printed, bags, or other articles may be placed one upon the other, and whereby, automatically, the uppermost sheet will be constantly carried to the position to be engaged by the picker member of the feed, and also to so construct the grippers that they will be operated automatically from a suction-pump, such pump being controlled by the driving-shaft of the attachment.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out 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 elevation of a portion of the feed-table, illustrating the application of the improvement thereto. Fig. 2 is a section taken longitudinally through the feed-table and likewise the table carrying the sheets, the section being taken near the centers of said tables and through the mechanism beneath the feed-table. Fig. 3 is a plan view of the feed-table, the sheet-table, and the attachment; and Fig. 4 is a vertical section through the sheet-table and a portion of a package of sheets supported by the table.

In carrying out the invention the feed-table A is provided usually with side hangers or flanges 10, and near the lower end of this table a drive-shaft 11 is journaled in the said hangers, while at the upper end the hangers journal a picker-shaft 12. A longitudinal

slot *a* is made in the feed-table at each side of its center, and beneath each of these slots a carrier in the form of an endless chain 13, belt, or its equivalent is located, the said chains or belts being provided with pins 14, which extend upward within the slots *a* and beyond the upper face of the feed-table a predetermined distance, the pins being capable of having the paper which is fed dropped between them and of moving the paper by the engagement of the pins with the edges of the paper. The carrier-belts are passed over sprocket or chain wheels 15, secured upon the shaft 16, journaled transversely beneath the table and as close as possible to its under face. In fact, the under face of the table where these chain-wheels are located is recessed, in order that the upper stretches of the belt may be very close to the table or even extend within the slots *a* of the feed-table, as shown in Fig. 2, and the forward parts of the endless carrier-belts are supported by similar chain-wheels 17, which are secured upon a second shaft 18 parallel with the shaft 16 and also located quite close to the under face of the table. A third sprocket-wheel 19 is secured upon the upper chain-wheel shaft 16, and this shaft is driven from the drive-shaft 11 through the medium of an endless chain belt 20, passed over the wheel or pulley 19 and over a larger pulley 21, located on the drive-shaft.

The picker-shaft 12 is provided at each end with an arm 22, and these arms normally extend upwardly and rearwardly beyond the rear end of the feed-table, as shown in Fig. 1. The arms 22 loosely support a pipe 23, which may be of metal and preferably is so made, and the said pipe 23 is provided with a number of branches 24 of less diameter, each terminating in a cup 25, and these cups are termed the "pickers" of the attachment, since they are intended to take up the sheets of paper 26 one after another from a pile of such articles.

A suction-pump 27 is placed conveniently to and preferably beneath the feed-table, being operated through the medium of a piston-rod 28, connected with the drive-shaft 11 by means of an eccentric 29, as shown in Fig. 2. A pipe 30 is connected with this pump and extends upward at the rear of the feed-table,

and the pipe 30, which is preferably also of metal, is connected with the upper head or cross pipe 23 by means of tubing 31 of a flexible material, in order that the head or cross-pipe 23 may be rocked in its bearings, and the suction-cups 25 are normally kept in vertical position while the arms 22 carry them from the pile of paper over the feed-table and back from the feed-table to the pile by means of a link 33, which is pivoted to one side of the feed table or a near support, and likewise with a crank-arm 34, secured to the head member of the suction pipe or pipes connected with the suction-pump.

The weight of the arms 22 and the material carried thereby is balanced by means of a shifting weight 35, placed upon an arm 36, projected from the said picker-shaft at a predetermined point in its length, and the arms 22 operating the picker or suction device are manipulated by the rocking of the picker-shaft 12, and this is preferable accomplished by securing on the said shaft, usually at one end, a gear 37, which may be and preferably is a mutilated gear, as shown in Fig. 1, and the teeth of this gear engage with a segmental toothed head 38, formed at one end of a lever 39, the lever being fulcrumed ordinarily between its rear end and center, as, for example, at the point *a'* on one of the hangers 10 of the feed-table. The rear end of this lever is provided with a friction-roller 40, which enters a cam-race 41, made in the inner face of a disk 42, secured upon the drive-shaft.

At the back of the feed-table and adjacent thereto the sheet-carrying table B is supported in any approved manner. This table carries a crib 43, the members whereof are adjustable. Each member of the crib is provided with a foot-section having sliding movement on the table B, and beneath each foot portion of the crib-section a slot 60 is made in the table, and the foot of each crib-section is engaged by a block 61, while a bolt 62 is passed down through each block and through one of the slots 60 in the table, being provided at one end with a nut, so that when the bolt is screwed up the block 20, carrying the bolt, will be clamped down firmly on the foot of the crib-section to which it belongs, and the said section will be bound tightly to the table. It is therefore evident that any one or all of the crib-sections may be adjusted on the table a distance equal to the length of the slots 60. The said crib is formed to receive between its members the sheets, bags, or other articles 26 to be printed, they being piled one upon the other on a plunger 44, which has sliding movement in the crib. This plunger is secured to the upper end of a rack 45, and the said rack is carried downward through the sheet-supporting table and below the same, and beneath the table, in a suitable hanger 46, a shaft 47 is journaled, provided at one end with a pinion 48 and at or near the opposite end with a ratchet-wheel

49, both of them being fast on the shaft, and the ratchet-wheel is prevented from turning in any but one direction through the medium of a pawl 50, but may be rotated in the other direction through the medium of a spring-controlled dog 51, pivoted upon the arm 52, having pivotal mounting on the shaft 47. The opposite end of this arm 52 is adjustably connected with a link 53, the said link being pivotally attached to a crank-arm 54, projected from the gripper-shaft.

The pinion 48 on the shaft 47 meshes with a gear 55, mounted on the upper shaft, which likewise carries a pinion 56 to engage with the rack 45. Suitable guides 63 may be and preferably are placed on the top of the feed-table, extending longitudinally thereof, in order to preserve the sheets to be printed in proper position until they are carried to the press or conveyed to the operator or take-up mechanism of the press.

In the operation of this device when the pickers 25 are in engagement with the top sheet of paper in the crib 43 the piston of the suction-pump will be upon its upward stroke, and thereby will create substantially a vacuum in the pipes 30 and 31 and in the head pipe or member 23. Consequently the sheet will be attracted and held by the pickers, and this condition will continue until by the rocking of the gripper-shaft the pickers are carried, together with the sheet, over on the table to the position shown in dotted lines in Fig. 1, at which time the piston of the suction-pump will be upon its downward stroke, and the air forced into the pipes 30 and 31 and in the head-pipe 23 will cause the sheet to be released by the pickers. The sheets will then be taken up by the carriers 13 and will be conveyed along the feed-table. While the grippers are taking the sheet from the crib the link 53, connected with the feed mechanism of the plunger of the crib, will have been carried upward, and upon the rearward or return movement of these grippers the consequent downward movement of the link 53 will cause the dog 51 to revolve the ratchet-wheel a distance sufficient to cause it, by the connection heretofore described with the rack 45, to elevate the plunger 44 in the crib a distance corresponding to the thickness of the sheet removed from the top of the pile, so that the sheets will be presented to the grippers one after the other until each and every sheet has been removed from the crib, the crib being so placed and so constructed that it will not interfere with the action of the grippers to the slightest extent.

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

1. In a feed attachment for printing-presses, the combination, with a feed-table, a drive-shaft, a picker-shaft journaled beneath the table and provided with a mutilated gear, a cam secured on the drive-shaft, a lever operated by the cam at one of its ends, being

provided at its opposite end with a rack for engagement with the said gear, and arms projected from the extremities of the gripper-shaft, of a pipe journaled in the said arms and  
5 provided with suction-cups communicating with the interior of the pipe, a suction-pump the piston whereof has an eccentric connection with the drive-shaft, a flexible connection between the said pump and the said pipe  
10 carrying the cups, and a weight adjustably connected with the picker-shaft, as and for the purpose set forth.

2. In a feed attachment for printing-presses, the combination of a drive-shaft, a picker-  
15 shaft, a gear-wheel on the picker-shaft, a le-

ver having a toothed sector meshing with the gear of the picker-shaft, a disk fixed on the drive-shaft and having an eccentric groove receiving a portion of the lever, arms rigidly secured to the picker-shaft, a tubular shaft 20 carried by the arms, a suction-picker communicating with the tubular shaft, and an operated pump having flexible communication with the tubular shaft, substantially as described.

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