No. 700,553. Patented May 20, 1902.

H. PARKER.

PAPER MAKING MACHINE.

(Application filed Sept. 19, 1900.)

(No Model.) 4 Sheets—Sheet 1.

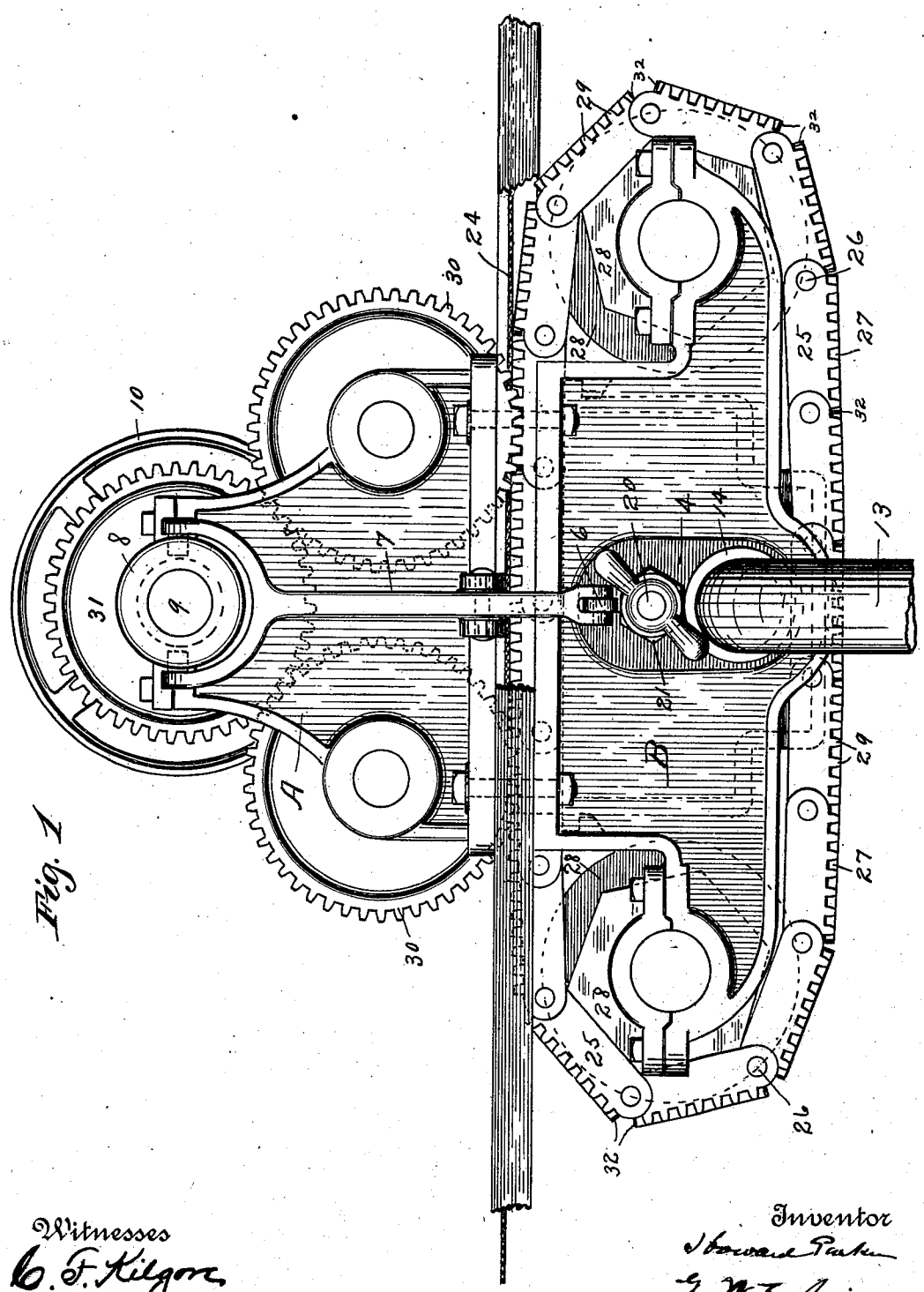


Fig. 1

Witnesses
C. F. Kilgore.
N. E. Hall.

Inventor
Howard Parker
by W. E. Simonds
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 700,553. Patented May 20, 1902.

H. PARKER.

PAPER MAKING MACHINE.

(Application filed Sept. 19, 1900.)

(No Model.) 4 Sheets—Sheet 2.

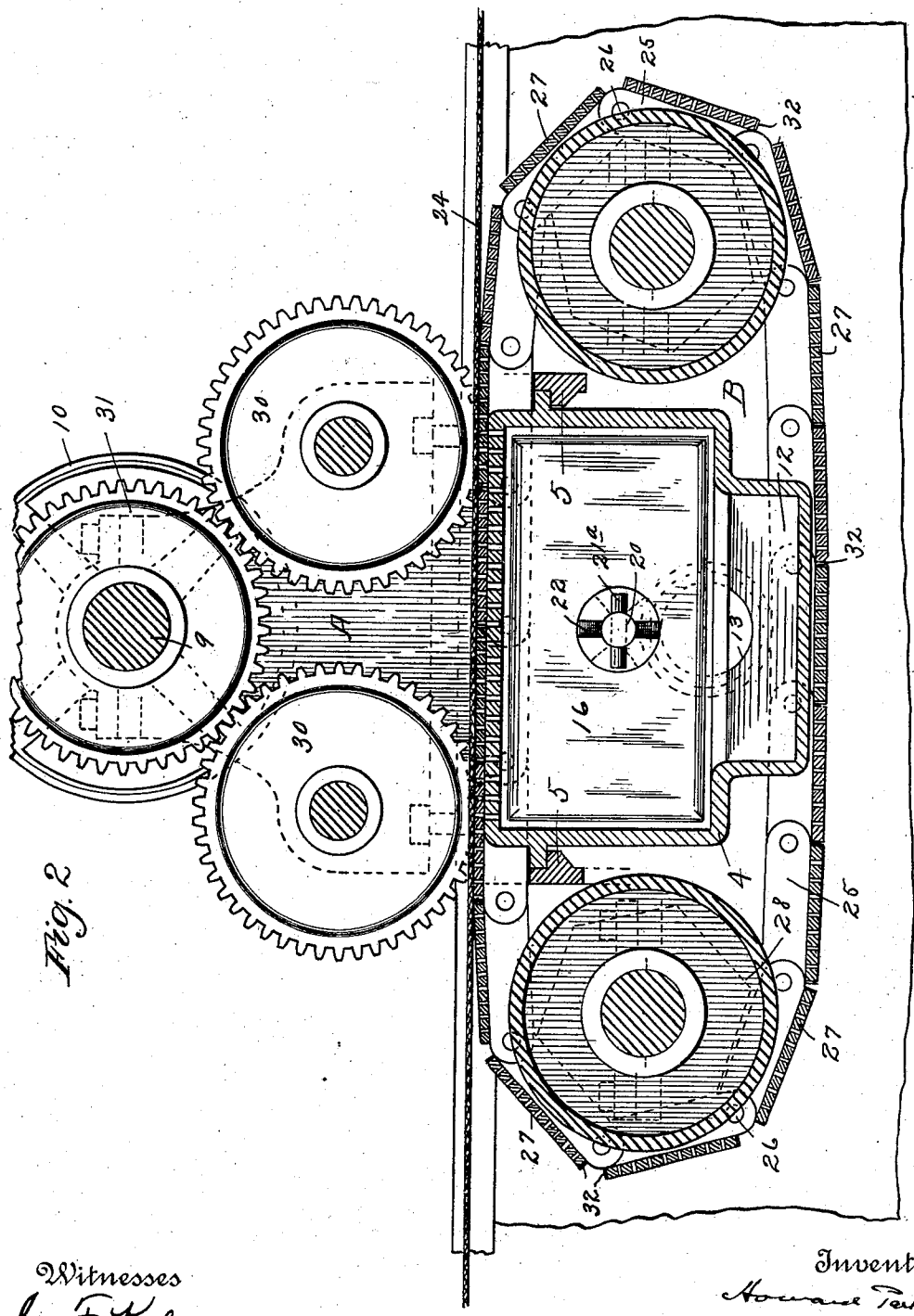


Fig. 2.

Witnesses
C. F. Kelgore
N. E. Hart

Inventor
Howard Parker
by W. E. Simonds
Attorney

THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON, D. C.

No. 700,553. Patented May 20, 1902.

H. PARKER.

PAPER MAKING MACHINE.

(Application filed Sept. 19, 1900.)

(No Model.) 4 Sheets—Sheet 3.

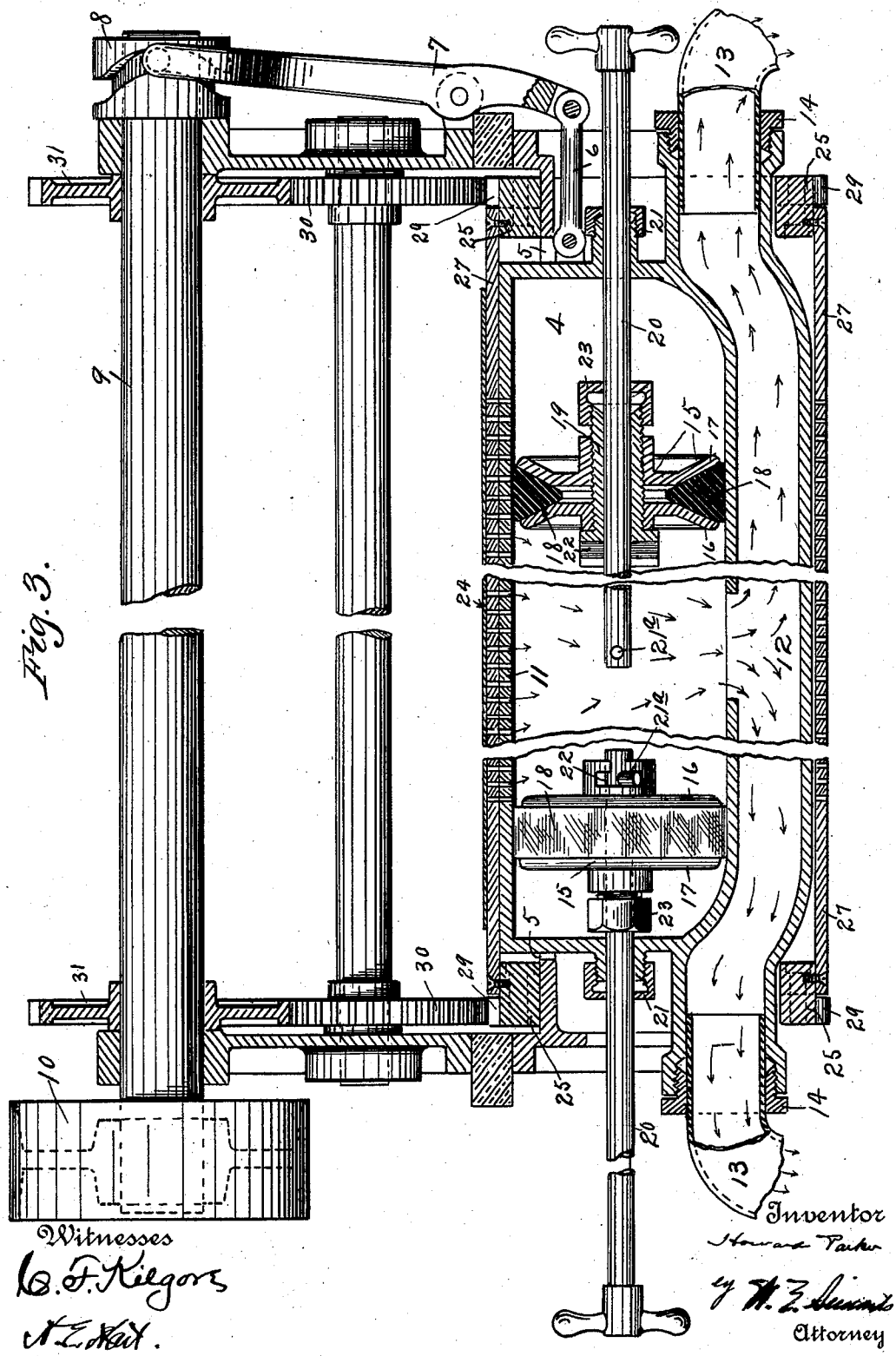


Fig. 3.

Witnesses
B. F. Kilgore
N. E. Hall.

Inventor
Howard Parker
by W. Z. Hunt
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 700,553. Patented May 20, 1902.

H. PARKER.

PAPER MAKING MACHINE.

(Application filed Sept. 19, 1900.)

(No Model.) 4 Sheets—Sheet 4.

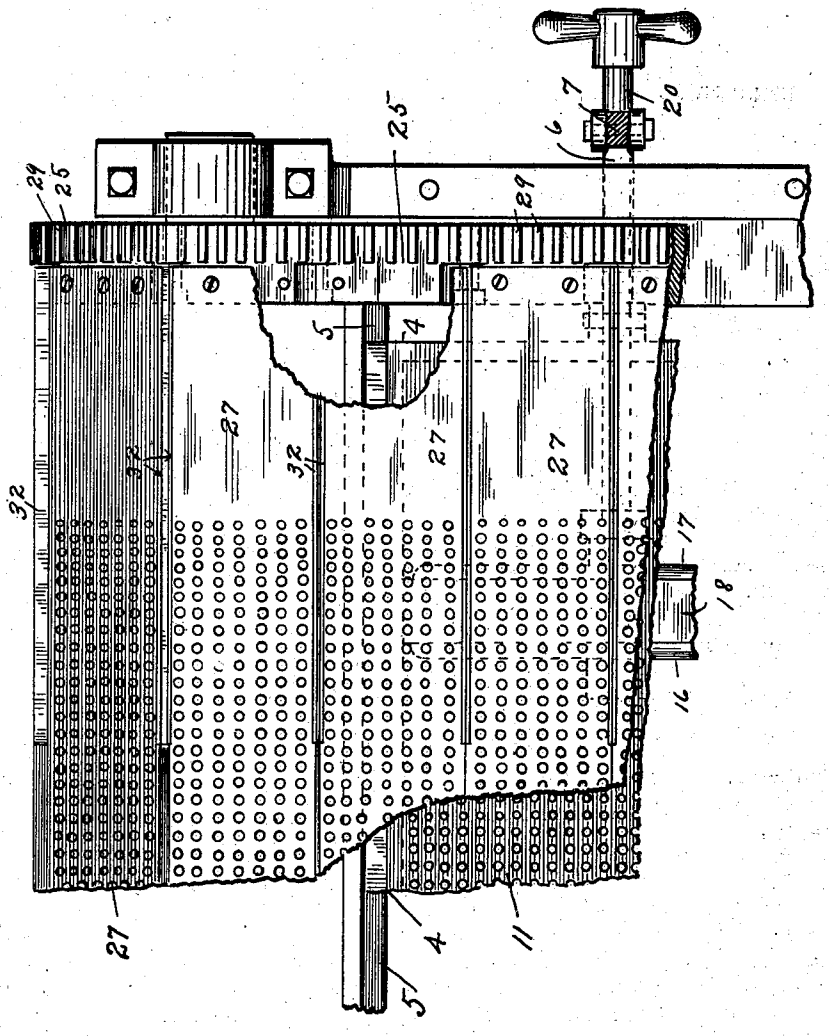


Fig. 4.

Witnesses
C. F. Kilgore
N. E. Hall.

Inventor
Horace Parker
by W. B. Stinson
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HOWARD PARKER, OF BELLOWS FALLS, VERMONT.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 700,553, dated May 20, 1902.

Application filed September 19, 1900. Serial No. 30,503. (No model.)

To all whom it may concern:

Be it known that I, HOWARD PARKER, a citizen of the United States of America, and a resident of Bellows Falls, in the county of Windham and State of Vermont, (having a post-office address at Bellows Falls, Vermont,) am the inventor of certain new and useful Improvements in Paper-Making Machines, of which the following is a full, clear, and exact description, whereby any one skilled in the art may make and use the same.

My invention relates to paper-making machines, and more especially to the specific parts of such machine where the moisture is partially withdrawn from the pulp while it is being formed upon any suitable interstitial paper-former, as traveling paper-making molds or endless paper-making wire webs or aprons.

The object of my improvement is to provide more efficient means for withdrawing the water or moisture from the pulp by securing a high degree of vacuum in what may be called a "suction-box" and at the same time to provide such an apparatus as will obviate much of the wear of the aprons, screens, or felts upon which the pulp is carried.

Prior to my invention suction-boxes have been commonly used on machines of this class, and in all cases, so far as I know, the suction-boxes are substantially stationary with relation to the movement of the forming screens or molds.

Figure 1 is a side view of a machine embodying my invention, showing the general relation of the parts. Fig. 2 is a sectional side view of the same. Fig. 3 is a central transverse section showing the stops in the suction-box and their method of operation. Fig. 4 is a detail plan view.

Referring to the drawings, 1 denotes the frame, which is made up of the upper part A and the lower part B. The lower part supports the suction-box and the carrier, while the upper section supports the driving-gears and the mechanism for imparting a reciprocating motion to the suction-box. The suction-box 4 is rectangular in form and is mounted on the guides 5 to permit of its having a slight movement crosswise of the machine. Motion is imparted to the box by the link 6 and the pivoted lever 7, having at its upper end a roller which travels in the cam-slot 8 on the end of the shaft 9. The shaft 9 is driven by the pulley 10.

The top of the suction-box is a perforated plate 11. Under the bottom is the chamber 12, which opens into the suction-box between the stops hereinafter described. Pipes 13 extend into this chamber 12 through stuffing-boxes 14. The pipes 13 are stationary and are connected with the chamber 12 by a slip-joint, the stuffing-boxes 14 preventing the entrance of air around the pipe into the suction-chamber. Any water which is drawn into the suction-box from the forming-screen will also be carried off through pipes 13.

Within the suction-box are the movable stops 15 for shutting off the suction from such part of the suction-plate 11 as may be desired, and thus forming a convenient means for varying the active width of the screen for forming webs of paper of different widths. These stops consist of two oppositely-disposed bevel-plates 16 17 and an intermediate cushion 18. The plates 16 17 are connected by a sleeve 19, which is threaded exteriorly and engages one of the plates 17 through coöperating screw-threads. A rod 20 extends through a stuffing-box 21 into the box, its inner end projecting through the sleeve 19, which connects the plates 16 17. In the end of this rod 20 is the pin 21^a, adapted to engage a T-shaped recess 22, formed in the head of the sleeve 19. By engaging this pin 21^a with the T-shaped recess 22, as shown in the stop at the left in Fig. 3, the sleeve 19 may be turned, supporting the plates 16 17 and permitting the elastic cushion 18 to contract and resume its normal position. The stop may now be moved bodily to any desired position to vary the active width of the perforated plate 11. By turning the sleeve in the opposite direction by means of the rod 20, pin 21^a, and T-shaped slot 22 the plates 16 17 will be brought together, their beveled surfaces coacting upon the elastic cushion 18, expanding it until it crowds against the four walls of the suction-box, thus providing an air-tight partition across the box. At the outer end of the sleeve 19 is arranged a stuffing-box 23, which prevents the entrance of air about the rod 20 into the suction-compartment. When the stop has been adjusted to the position desired,

the pin 21ª may be disengaged from the T-shaped slot 22 and the rod 20 pushed through the sleeve 19, as shown in the stop at the right of Fig. 3. This allows of getting the end of the rod out of the way of the machine operator and is an important feature in the construction of the machine. In connection with this suction-box I interpose what may be called a "carrier" between the suction-plate 11 and the forming-screen 24. This carrier is made up of a series of links 25, hinged together, as at 26, forming an endless chain. One of these chains is located at each side of the machine, as shown clearly in Fig. 3. Each pair of links, one on each side of the machine, supports a finely-perforated plate 27, which is firmly secured to them. At each end of the machine the chain of links passes about drums 28, which are preferably made hexagonal. On the upper face of the links are the teeth 29, which mesh with the gears 30, which are driven by the gear 31, secured to the shaft 9. By this construction the carrier is driven from the two points which move the plates forward always in the same relation to each other. It is clear that should this sectional carrier be driven from one point only the chains would be liable to stretch slightly and produce leakage at the joints; but by driving in the manner above described this objectionable feature is entirely done away with. In order to effectually seal the joints between the plates, I secure to the edges of the plates strips of rubber 32, which when the carrier is passing over the suction-box are pressed closely together, as shown clearly in Fig. 4, preventing any leaking of air into the suction-compartment. It is not necessary to extend these rubber strips the full length of the plates, it being sufficient to have them extend in toward the center of the machine to a point corresponding to the inward limit of movement of the suction-stops, and in the drawings I have shown them extended only part way of the length of the plates.

The contacting faces of the suction-plate 11 and of the carrier-plates 27 are carefully ground, so as to fit closely together and work smoothly on one another. The forming screen or web which carries the pulp is carried over the suction-box on the above-described sectional carrier, the moisture being extracted from the pulp as it passes over the suction-box and dropping into the chamber 12, from which it is extracted through the pipes 13. The forming-screens are of very delicate construction, and in the ordinary forms of machines in which they are used they do not last over ten or twelve days. Taking into consideration, in connection with the short life of the screen, its great cost and it is seen that this one step is the most expensive one in the manufacture of paper. By using my invention the strain and excessive wear come on the suction-plate 11 and the strongly-built carrier-plates 27, and the relative movement of the suction-plate and the carrier-plates in a direction transverse to the direction of travel of the carrier continually wears these parts to a perfect fit.

While I have shown and described the preferred form of embodiment of my invention, it is obvious that other arrangements of parts may be utilized for accomplishing the desired results, and I desire to include herein any such modifications of the apparatus.

I claim as my invention—

1. In combination in a suction apparatus for paper-making machines, a series of links bearing plates and forming a carrier and suction apparatus operatively mounted with relation to said carrier and means for driving the carrier and maintaining a positive contact between its several sections as they pass over the suction apparatus, substantially as described.

2. The combination in paper-making machinery with the suction apparatus and the traveling forming-screen of a carrier interposed between the suction apparatus and the traveling screen, said carrier comprising links connected in pairs by perforated plates, substantially as described.

3. The combination in paper-making machinery with the suction apparatus and the traveling forming-screen of a carrier interposed between the suction apparatus and the forming-screen, said carrier comprising links connected in pairs by perforated plates, and means for sealing the openings between the plates as they pass over the suction apparatus.

4. The combination in paper-making machinery with the suction apparatus and the traveling forming-screen of a carrier interposed between the suction apparatus and the traveling screen, said carrier comprising links connected in pairs by perforated plates, and a yielding material secured to the opposing edges of said plates, as and for the purposes specified.

5. In combination in a device of the class specified, an endless carrier comprising a series of links and perforated plates, racks formed upon the links, gears for positively driving said links in a fixed relation to each other, and a suction-box operatively mounted with relation to said carrier, substantially as described.

6. In combination in a device of the class specified, an endless carrier comprising a series of links and perforated plates, racks formed upon the links, gears for positively driving said links in a fixed relation to each other, and a suction-box operatively mounted with relation to said carrier, and adapted to have a movement crosswise thereof.

HOWARD PARKER.

Witnesses:
WILLIAM H. GULLIVER,
SCOTT J. MASON.