

(No Model.)

C. CHAPIN.

SUCTION PLATE FOR PAPER MACHINES.

No. 395,544.

Patented Jan. 1, 1889.

FIG. 1.

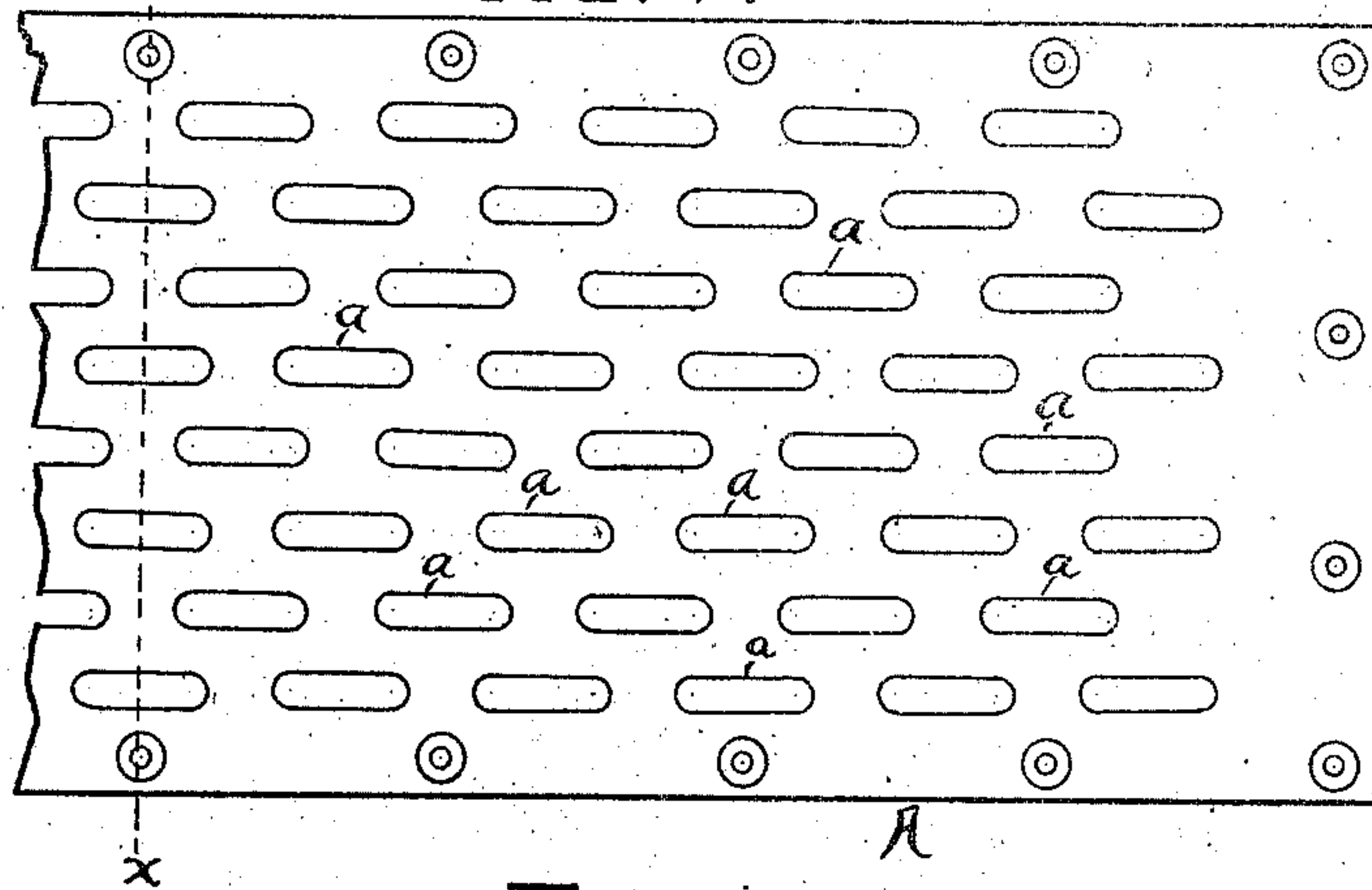


FIG. 2.

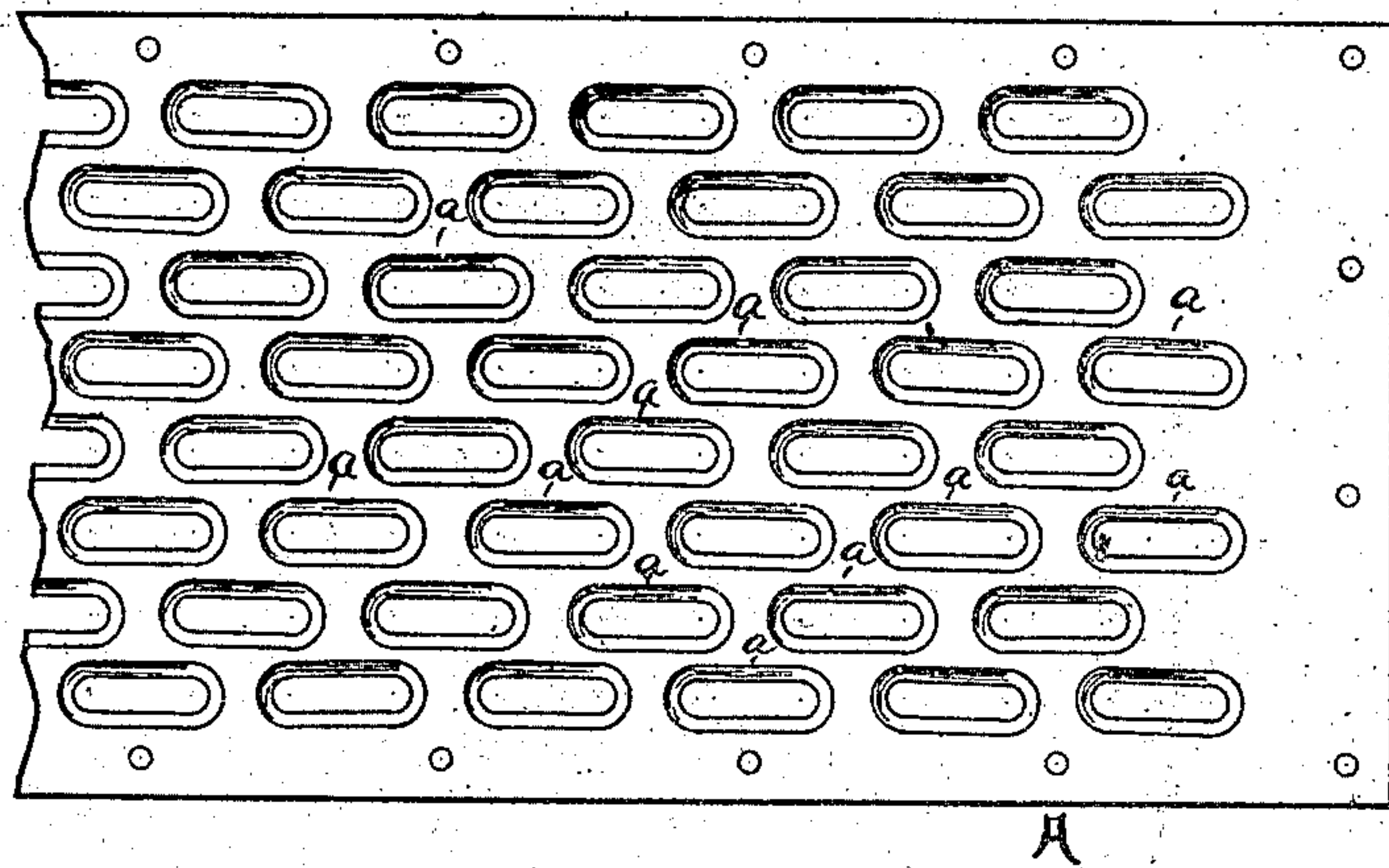
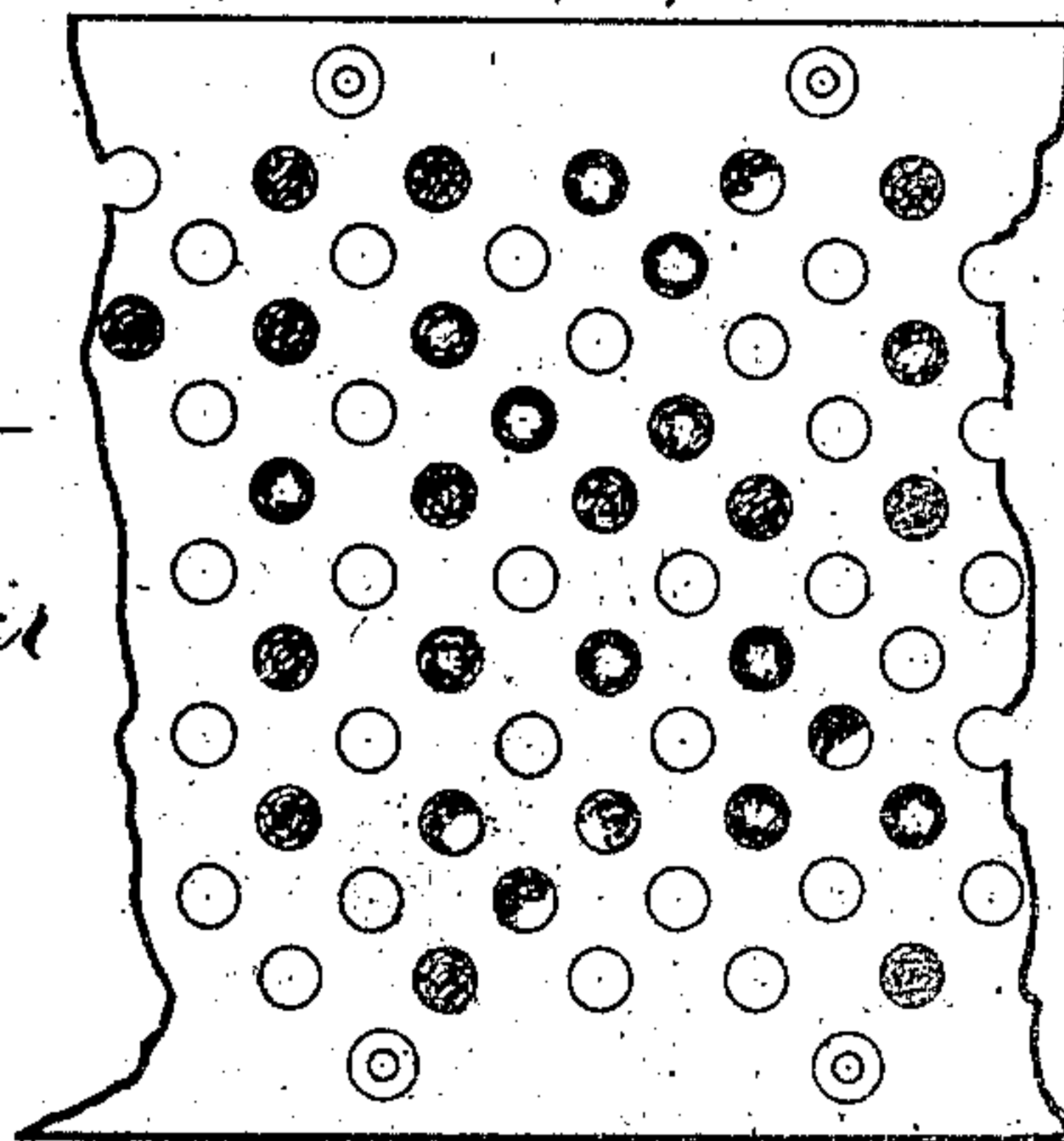


FIG. 3.



FIG. 4.



Witnesses—

Harrison Gardner
H. H. Chapman.

Inventor—

Chalmers Le Chapin
By James T. Chapman
Attorneys.

UNITED STATES PATENT OFFICE.

CHALMERS CHAPIN, OF HOLYOKE, MASSACHUSETTS.

SUCTION-PLATE FOR PAPER-MACHINES.

SPECIFICATION forming part of Letters Patent No. 395,544, dated January 1, 1889.

Application filed June 17, 1887. Serial No. 241,583. (No model.)

To all whom it may concern:

Be it known that I, CHALMERS CHAPIN, of Holyoke, in the county of Hampden and Commonwealth of Massachusetts, have invented
5 a new and useful Improvement in Suction-Plates for Paper-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

10 My invention relates to the plates by means of which the bulk of the water is eliminated from paper-pulp in its passage to the couch and press rolls of a paper-machine, said plates being provided with a series of perforations
15 through which the water is drawn as the pulp passes over the plate by exhaust mechanism so arranged as to produce a vacuum beneath the plate. Heretofore these suction-plates have been made by boring or drilling a series
20 of round perforations in a brass or composition plate, the perforations being about one-fourth of an inch in diameter. This mode of making the plates not only makes them expensive, but serious difficulty is encountered
25 in their use, from the fact that the particles of pulp drawn into the perforations by the powerful suction exerted therethrough become clogged therein in such manner as to partially or wholly close them, whereby the
30 operation of extracting the water from the pulp is seriously impeded. Notwithstanding these objections, suction-plates with round perforations have been universally employed heretofore, for the reason that it was sup-
35 posed that such round perforations were essential to the creation of a perfect suction through the plate. I have discovered that this theory is fallacious and that an equally perfect suction can be created through a plate
40 having therein a series of slots extending in the direction of the length of the plate, and consequently transversely to the web of pulp which passes over the plate. I have also
45 found that inasmuch as said slots afford a much larger water-way than the round perforations heretofore employed the tendency of the particles of pulp to lodge therein is almost entirely obviated, and by causing the
50 walls of said slots to diverge from the upper to the lower surface of the plate such accumulation of the pulp therein is wholly prevented.

My invention therefore consists in the suction-plate having therein a series of slots, constructed as hereinafter fully described, and
55 particularly pointed out in the claims.

Referring to the drawings, in which like letters designate like parts in the several figures, Figure 1 is a plan view of my improved suction-plate. Fig. 2 is a similar view of said
60 plate inverted. Fig. 3 is a transverse vertical section thereof. Fig. 4 is a plan view of a portion of a suction-plate as heretofore constructed.

By reference to Fig. 4 it will be observed
65 that the perforations in suction-plates as heretofore made are round; and in said figure I have illustrated the appearance which such plate presents after having been in use a short
time, with some of its perforations entirely
70 closed by the pulp clogged therein and others partially closed.

The letter A designates the plate devised by me, said plate containing the series of
75 slots *a*. The slots are preferably five-eighths of an inch in length and one-fourth of an inch in width; but these dimensions may be increased or diminished within reasonable limits without materially affecting the operation
80 of the plate.

The slots *a* extend lengthwise of the plate A, as shown, and transversely to the web of pulp, which passes transversely across said plate, in the usual manner. The suction created
85 through slots thus arranged I have found to be equally perfect with that heretofore created through circular perforations, and a much more extended water-way being afforded by said slots, the particles of pulp drawn into them by the suction are carried by such ex-
90 cess of water through the plate, instead of lodging therein. To avoid any possible clogging of the pulp in the slots by reason of varying consistencies of the pulp, I prefer to make the walls of said slots diverging from
95 the upper surface of the plate to the lower surface thereof, as shown in Figs. 2 and 3, whereby a plate which will be perfect in its operation, whatever the consistency of the pulp may be, is afforded.

100 Another important advantage gained by my invention is the fact that I am enabled to avoid the slow and expensive work of boring or drilling the perforations heretofore inci-

dent to the manufacture of suction-plates, which has been rendered necessary by the impossibility of utilizing the process of casting in such manufacture. The plate devised by me, however, can be completed by a single operation of casting, the divergence of the walls of slots *a* enabling the pattern to be "drawn" from the mold with perfect accuracy and facility. It will thus be seen that I not only provide a suction-plate which is free from the objections incident to those heretofore used, but also one which can be made at a comparatively trifling cost.

I do not wish to limit myself to a plate the slots of which are of the exact shape or dimensions of those shown and described, as it is obvious that changes therein can be made within the spirit of my invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A suction-plate for paper-machines, having within its edges a series of slots extending longitudinally of the plate, substantially as and for the purpose set forth.

2. The suction-plate A, having the slots *a*, the walls of which slots diverge from the upper to the lower surface of the plate, substantially as and for the purpose described.

CHALMERS CHAPIN.

Witnesses:

W. H. CHAPMAN,
H. K. HAWES.