No. 700,554. Patented May 20, 1902.

H. PARKER.

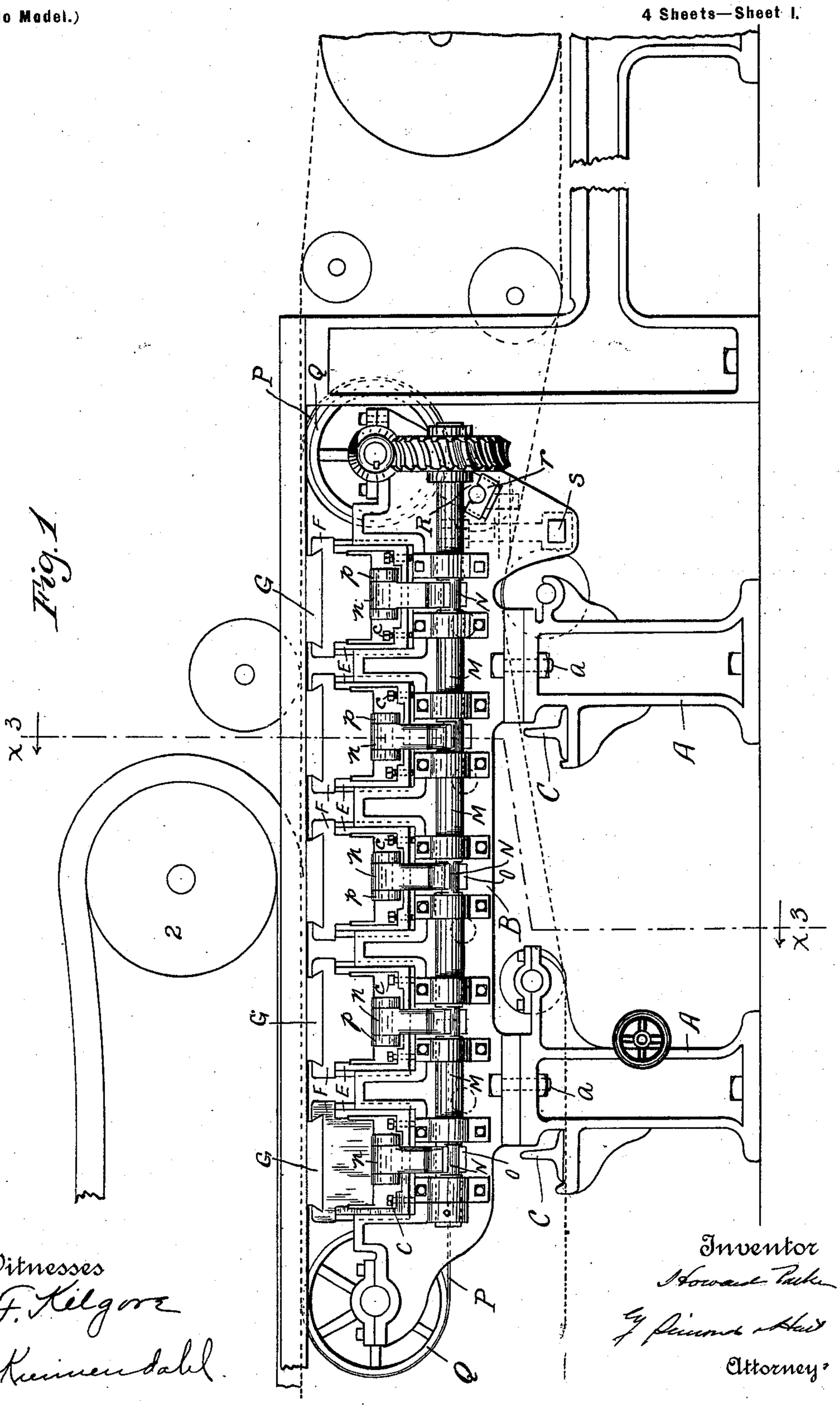
PAPER MAKING MACHINE.

(Application filed June 19, 1901.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1



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(No Model.) 4 Sheets—Sheet 2.

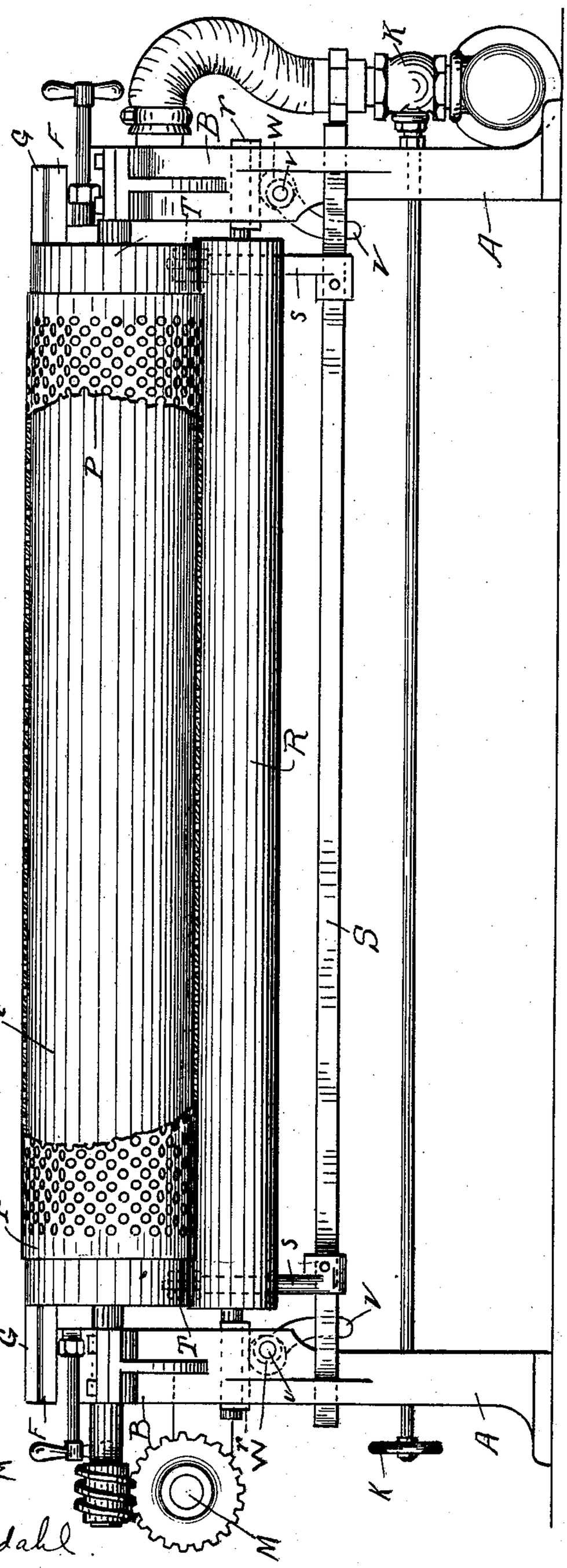

Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

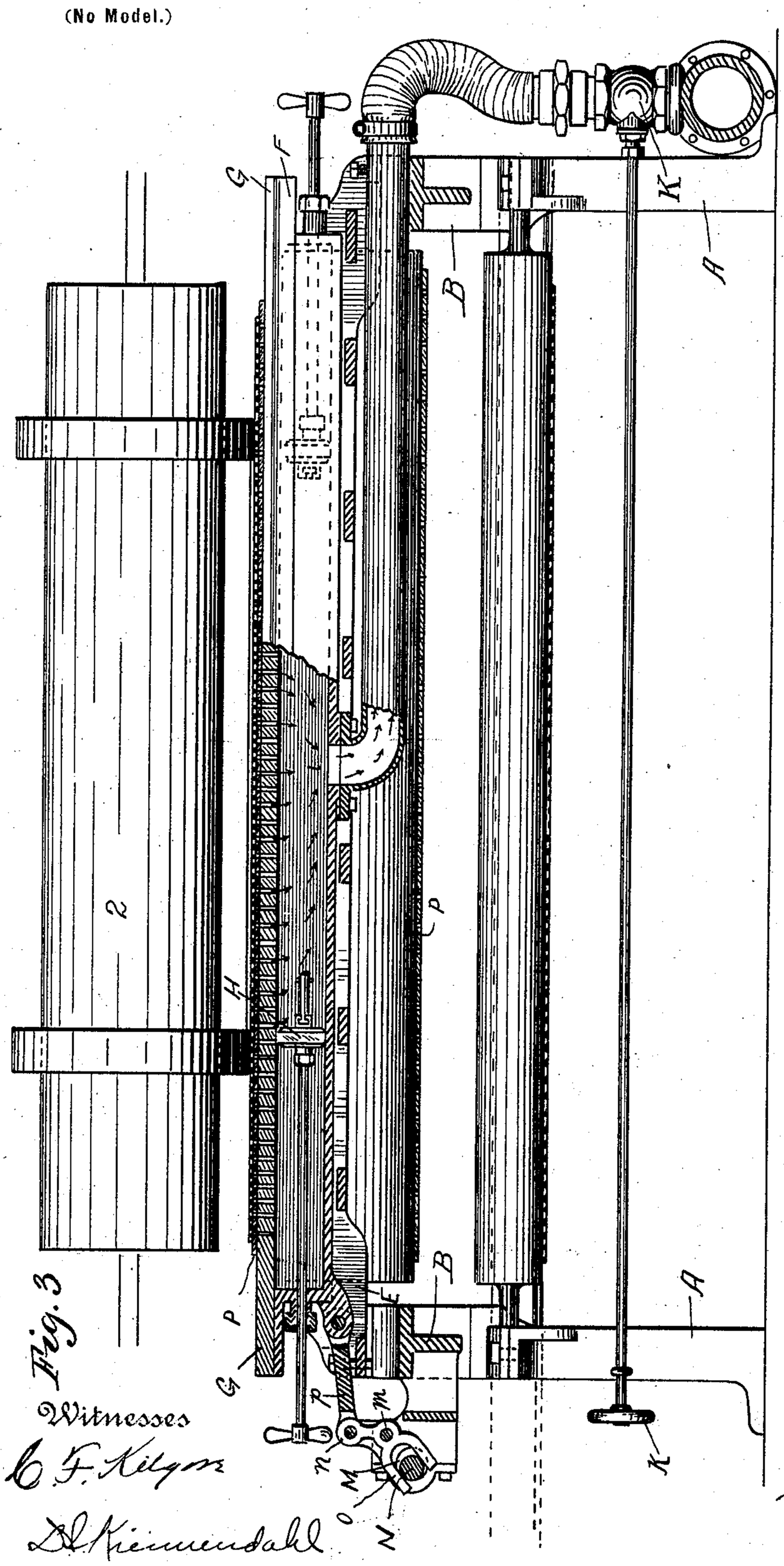

Fig. 3

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(No Model.) 4 Sheets—Sheet 4.

Fig. 4

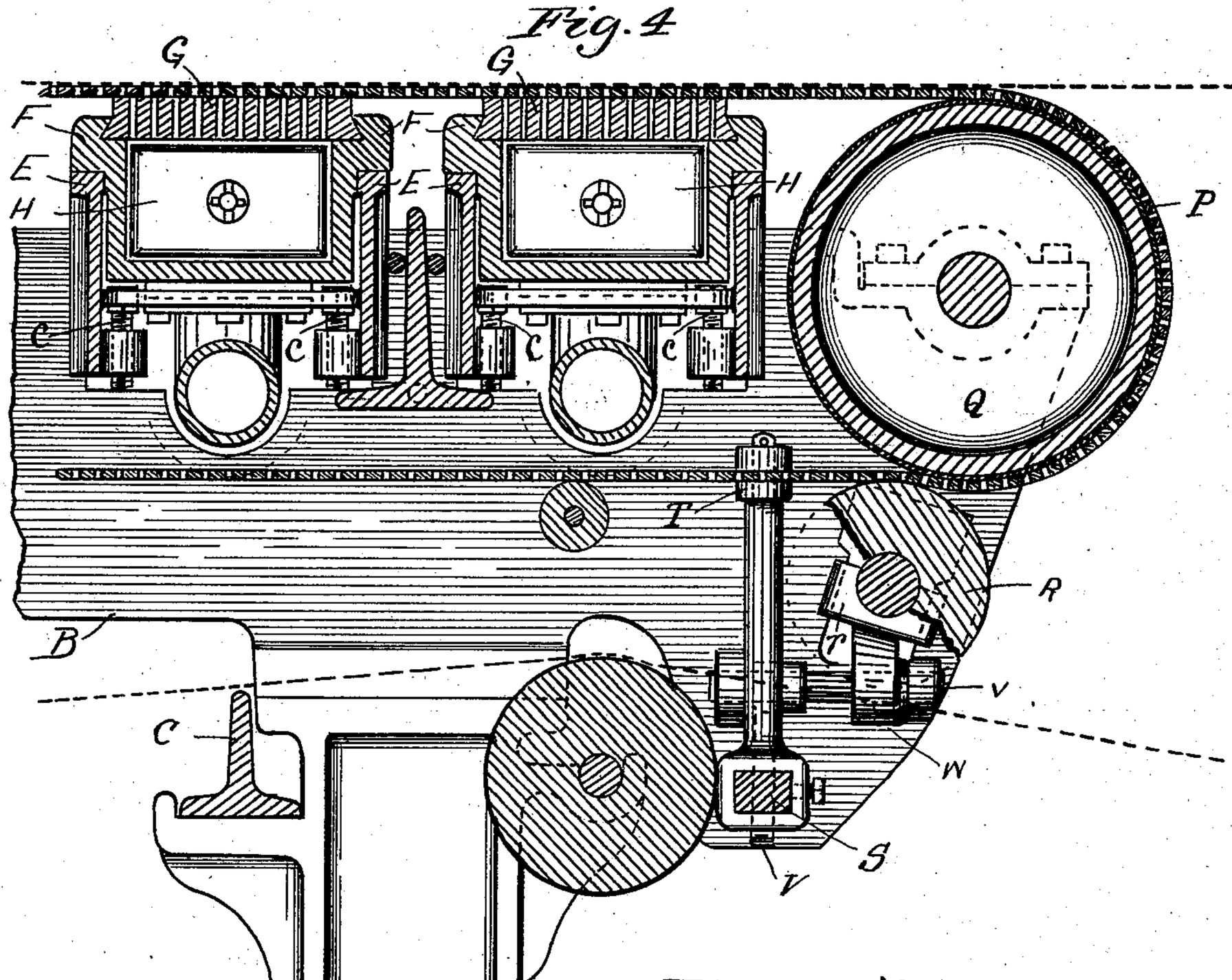


Fig. 5

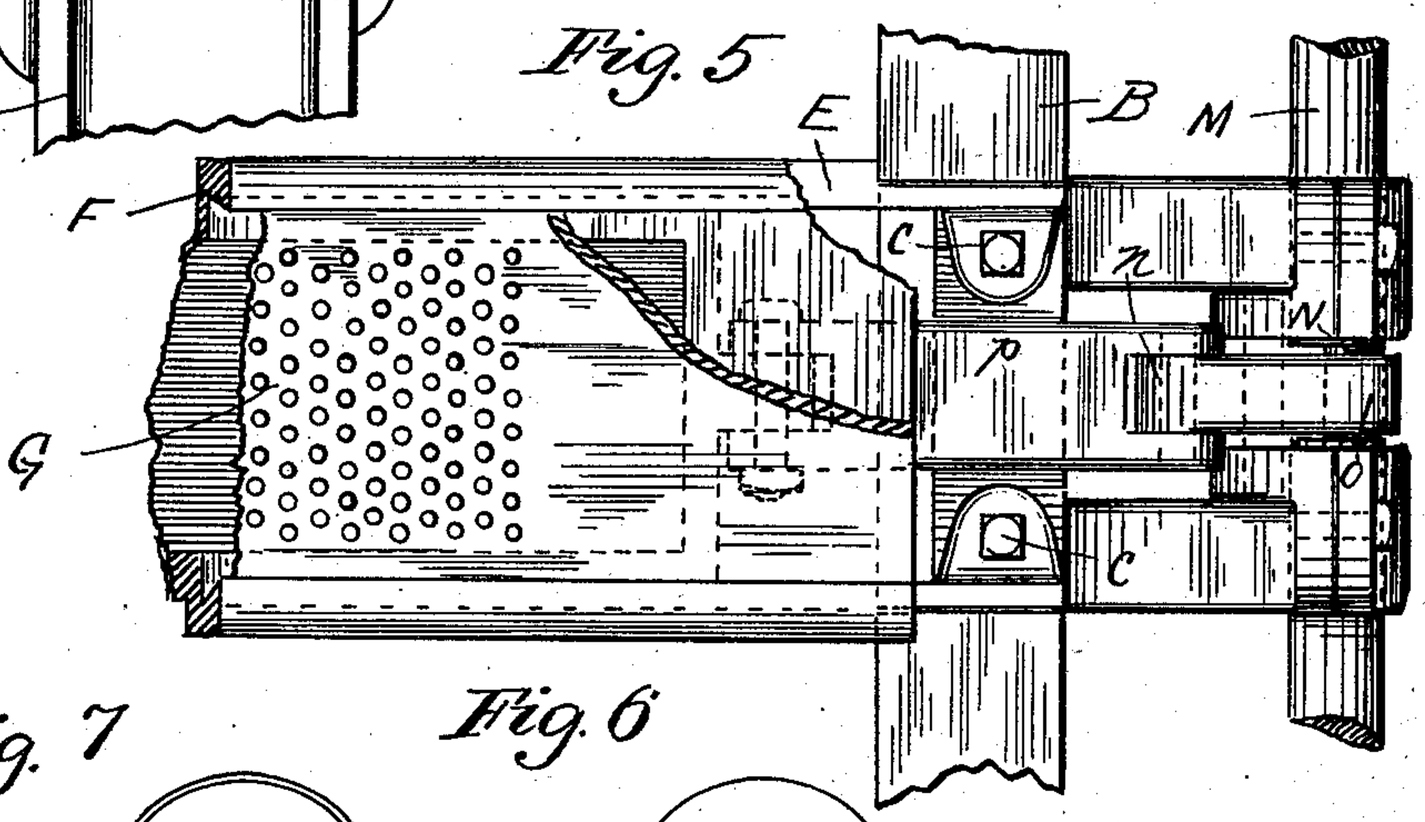


Fig. 7

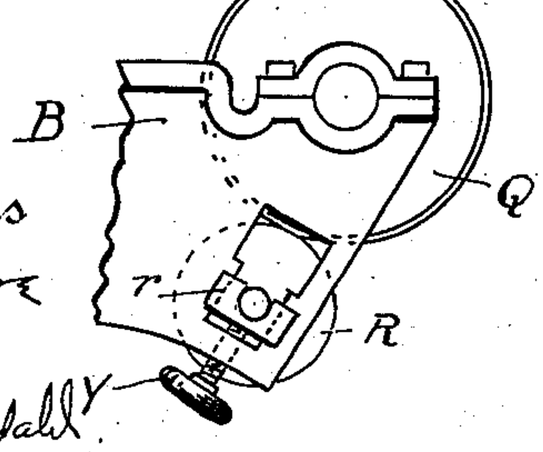
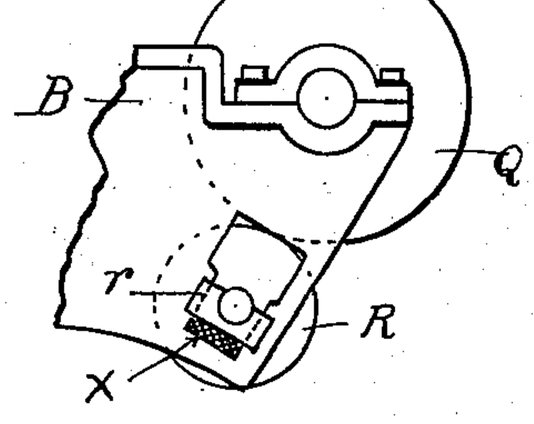


Fig. 6



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UNITED STATES PATENT OFFICE.

HOWARD PARKER, OF BELLOWS FALLS, VERMONT.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 700,554, dated May 20, 1902.

Application filed June 19, 1901. Serial No. 65,143. (No model.)

To all whom it may concern:

Be it known that I, HOWARD PARKER, a citizen of the United States, and a resident of Bellows Falls, in the county of Windham and State of Vermont, have invented certain new and useful Improvements in Paper-Making Machines, of which the following is a specification.

I have illustrated my invention in the drawings hereto annexed, in which—

Figure 1 shows in side view a machine in which my invention is embodied. Fig. 2 is an end view of the same looking from the right of Fig. 1. Fig. 3 is an end elevation, partly in section, on the line x^3 x^3 of Fig. 1 looking in the direction of the arrows. Fig. 4 is a detail view, on enlarged scale and partly in section, of the right-hand end of the apparatus. Fig. 5 is a plan view, on enlarged scale, of a small section of the apparatus. Figs. 6 and 7 show modifications.

My invention relates more particularly to the suction apparatus which is used for extracting moisture from the pulp formed on any suitable screen, such as Fourdrinier wire. This apparatus is of course to be placed in its proper position with relation to the rest of the machine, which is generally adjacent to the point where, for instance, the "stuff" is flooded onto the forming wire or web. Supported on suitable framework I arrange one or more suction-boxes mounted on suitable guides to permit them to be moved slightly back and forward in a direction crosswise of the direction of movement of the forming-screen. Suitable mechanism is shown for imparting a reciprocating motion to these suction-boxes. An endless belt travels over the upper sides of the suction-boxes, and I provide a means for manually or automatically keeping this endless belt in its proper position on the drums from which it runs.

A denotes the pedestal or bed-piece on which the suction apparatus is located.

B denotes the frame in which the suction-boxes are mounted. This frame is secured to the pedestal by means of the bolts *a*. On brackets *b* on the sides of the pedestal are T-irons C. In order to put a new wire on the machine, it is necessary to remove the suction apparatus. By removing the bolts *a* the frame B can be moved to the left until it rests on the T-iron C and then moved out of the way of the forming-screen. Any desired number of suction-boxes may be used in this apparatus. The machine shown in the drawings will accommodate five. The frame is grooved crosswise, as at D. In this are mounted the guides E, on which the suction-box F slides. Set-screws *c* are arranged on the guides to take up any wear which may occur on the suction-plate, which forms a cover for the top of the suction-box F. These suction-boxes may be of any desired construction. The one I have illustrated has a perforated suction-plate G, which forms the top of the boxes, and the stops H, by which the active surface of the suction-plate G may be varied. A suction-pipe is connected with a suitable suction apparatus. An operating-handle *k* permits of controlling the suction in any one of the boxes by the valve K.

In order to impart reciprocating motion to the suction-boxes, I mount on the side of the frame B brackets to support the shaft M. This shaft has on it a cam opposite the end of each box, and these cams are set each one in advance of the other, so that one suction-box will start forward a little bit in advance of the second and the second a little in advance of the third, &c. At the left of Fig. 3 the shaft is shown at M and one of the eccentrics at N. A yoke embraces the eccentric, is pivoted at *m*, and ends in a lever *n*, which is connected by the link *p* to the suction-box. It is clear that as the shaft revolves the yoke O will follow the eccentric N, will rock the lever *n*, and through the link *p* impart a reciprocating motion to the box. Each one of the boxes is supplied with a similar mechanism. Other arrangements can of course be used for accomplishing this object, and I do not intend to limit myself to the particular form shown and described.

An endless belt P passes over drums Q at each end of the machine and over the suction-plates G, located in the top of the suction-boxes. These belts are very strongly made, being preferably similar to the belts which I have shown in my applications for Letters Patent, serially numbered 53,080, 53,533, 53,534, 53,535. The reciprocating

motion of the suction-boxes and the continual forward movement of this endless belt constantly wear their contacting faces to a perfect fit. The movement of the suction-boxes to and fro across the direction of movement of the belt is liable to throw the belt to one side or the other of the drums Q, from which it runs. I have provided means for automatically keeping this belt in its proper position on the drums. To accomplish this, I mount the roll R in bearings which are carried on slides, so that the bearings may move toward or away from the drum Q. On the frame I mount the rod S, so that it may be moved slightly back and forth lengthwise of the roll. To this rod S, I secure arms having at their ends rollers T, which are in the plane of the lower part of the belt, as clearly indicated in Fig. 4, and if this belt should be moved out of its proper position it will almost immediately strike one of the rollers and throw it out of its normal position, carrying with it the rod S. To this rod S are connected levers V, which are pivoted at *v* and have at their ends the cams W, arranged oppositely to one another. On these cams, at a point between their highest and lowest parts, rest the bearings *r* of the roll R. As the rod S moves in one direction or the other it carries with it the levers V, which have at their ends the cams W. It is clear that the cam on the side toward which the rod S moves will raise that end of the roller R slightly and that the other cam will permit the opposite end of the roller R to be dropped slightly. It results from bringing one end of the roll R near to the drum Q that the belt P will be thrown over into its proper position, at which time the weight of the bearing *r* will throw the lever V and the rod S back into their normal positions. Motion is imparted to the moving parts by a pulley secured to one of the drums Q. In order to have a good frictional contact between the drum Q and the roll R, it is preferable to have the periphery of one or the other covered with some yielding material, such as rubber. Fig. 6 shows a modification, however, in which the periphery of the drum and the roll may be a metallic surface, and a rubber cushion X is placed underneath the bearing-blocks *r*. By this construction the same results are accomplished as if one of the rolls had a yielding material on its periphery. Fig. 7 shows how the one end or the other of the roll may be brought into closer contact with the drums Q manually, as by the hand-wheel Y.

In order to form the pulp into sheets of varying width, I mount over the forming-screen rollers, one of which is shown at 2, located over the suction apparatus. The other one would be at about the point where the stuff is flooded into the screen. Traveling around the rollers are the bands, which are preferably of some soft yielding material, such as rubber. These bands travel on the forming-screen and govern the width of the sheet of pulp, as clearly indicated in Fig. 3. The distance between these bands may be varied at will.

I claim as my invention—

1. A suction apparatus for paper-making machines, and means for imparting a reciprocating motion to said suction apparatus.

2. The combination in paper-making machinery with the forming-screen and the suction apparatus located in operative relation thereto and a carrier-belt interposed between said screen and said suction apparatus, of means for causing a relative movement between the forming-screen and the suction apparatus in a direction transverse to the direction of movement of the forming-screen.

3. In a paper-making machine, the traveling forming-screen, and the suction apparatus located in operative relation thereto, and means for imparting a reciprocating motion to the suction apparatus in a direction transverse to the direction of movement of the forming-screen.

4. In a machine of the class specified, the forming-screen and suction apparatus arranged in operative relation thereto, said suction apparatus being made up of elements, and means for imparting a reciprocating movement to said elements in successive relation to each other.

5. In combination in a paper-making machine, a traveling forming-screen, a suction apparatus located in operative relation thereto and having a perforated top, and a perforated traveling carrier located between the forming-screen and the suction apparatus, substantially as described.

6. In combination, in a paper-making machine, the traveling forming-screen, the suction apparatus located in operative relation thereto and having a perforated top, a perforated traveling carrier between the forming-screen and the suction apparatus, and means for causing a relative movement between the suction apparatus and the carrier, in a direction transverse to the direction of movement of the carrier.

7. In a machine of the class specified, the combination with the forming-screen and the suction apparatus, of a traveling belt located between the forming-screen and the suction apparatus, and a shifting device for automatically maintaining said belt in its proper position, substantially as described.

8. In a machine of the class specified, the combination with a frame supporting the suction apparatus, the suction apparatus located in said frame and the forming-screen, of a carrier-belt interposed between the suction apparatus and the forming-screen, and means for automatically controlling the position of the carrier-belt.

9. In a machine of the class specified, the combination with the frame supporting the suction apparatus, the suction apparatus located in said frame, and a forming-screen of an endless carrier-belt traveling over drums

mounted on the frame, a roll mounted in yielding bearings in operative relation with one of the drums, and means for moving the bearings of said roll, substantially as described.

10. In a machine of the class specified, the combination with the frame supporting the suction apparatus, and the suction apparatus located in said frame, of an endless belt traveling over a drum mounted on the frame, a roll mounted in yielding bearings in operative relation with said drum, and means for moving the bearings of said roll, substantially as described.

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