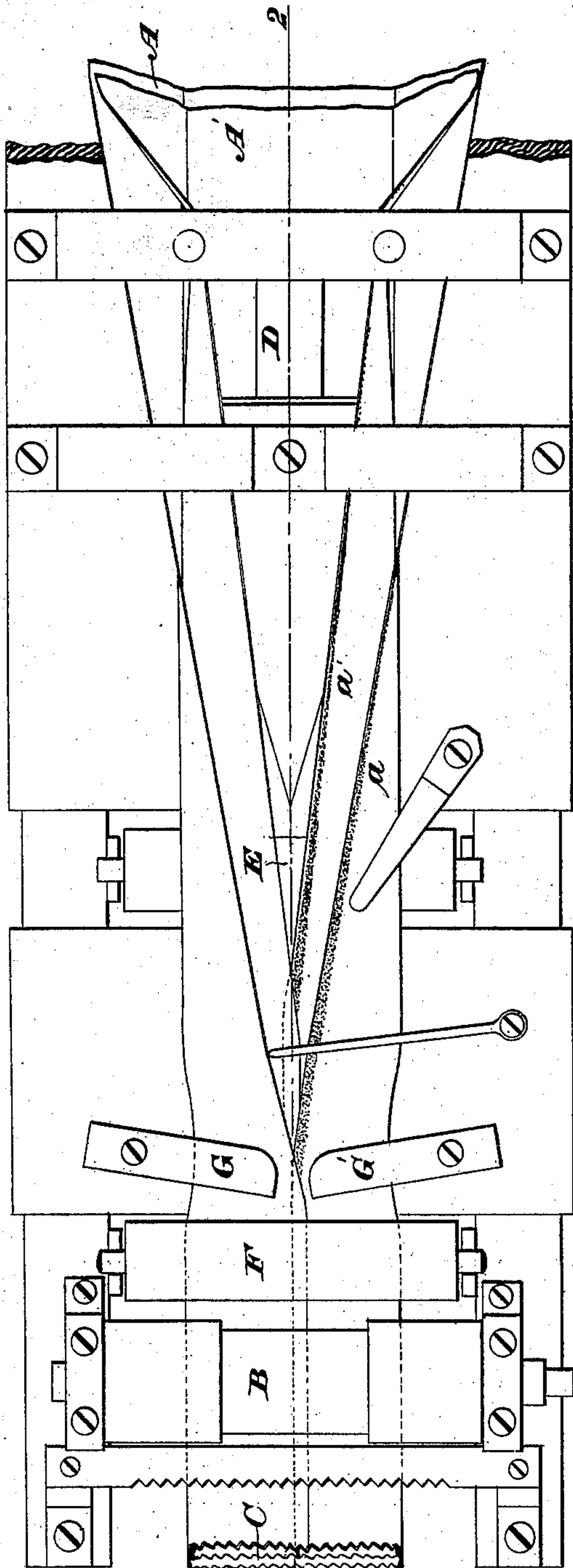


F. E. PORTER.
Paper-Bag Machine.
No. 211,256. Patented Jan. 7, 1879.

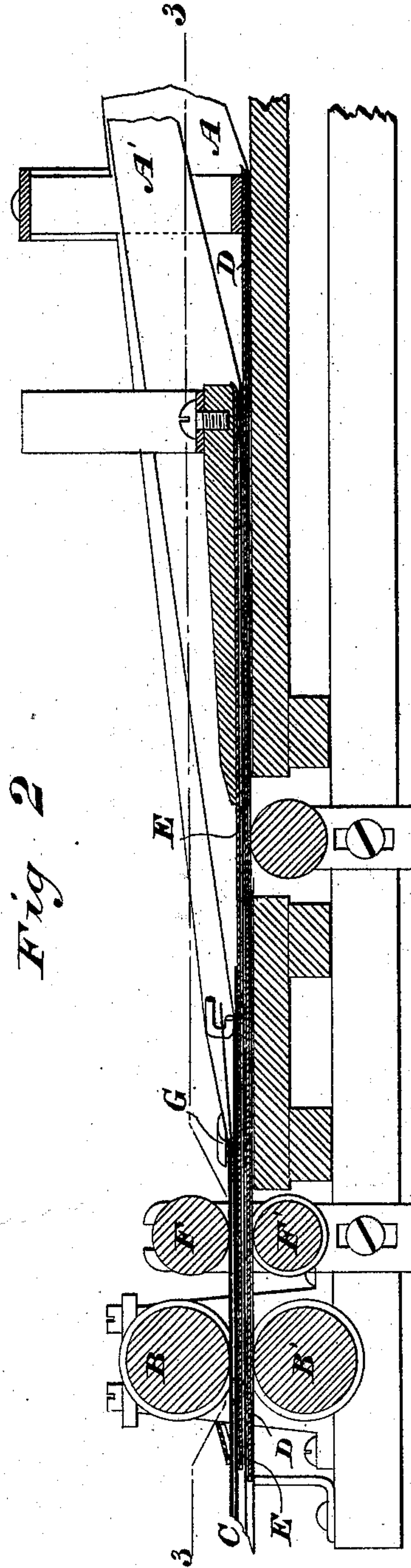
Fig 1.



WITNESSES

Wm A Skinkle
Geo W. Bruck.

Fig 2



INVENTOR

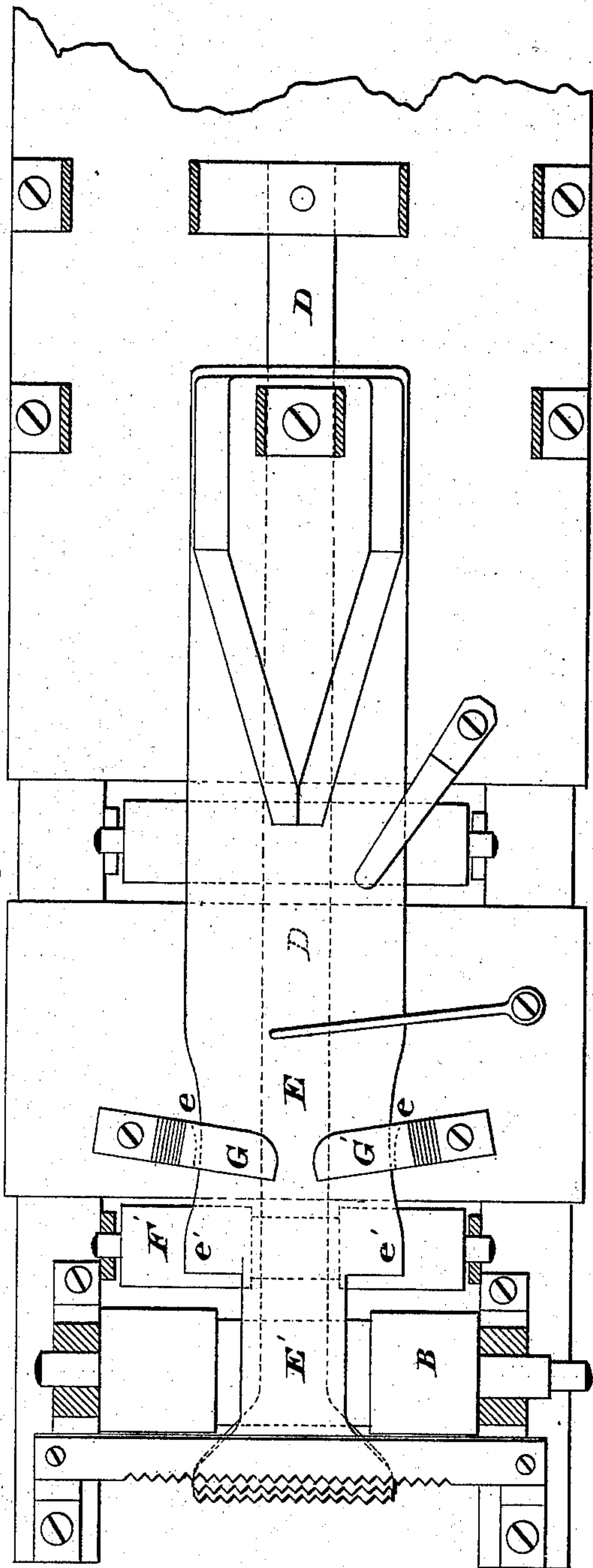
Frederick E Porter

By his Attorneys.

Baldwin, Hopkins & Peyton.

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Fig 3.



WITNESSES

Wm A Skinkle
Geo W Breck.

Fig 4.

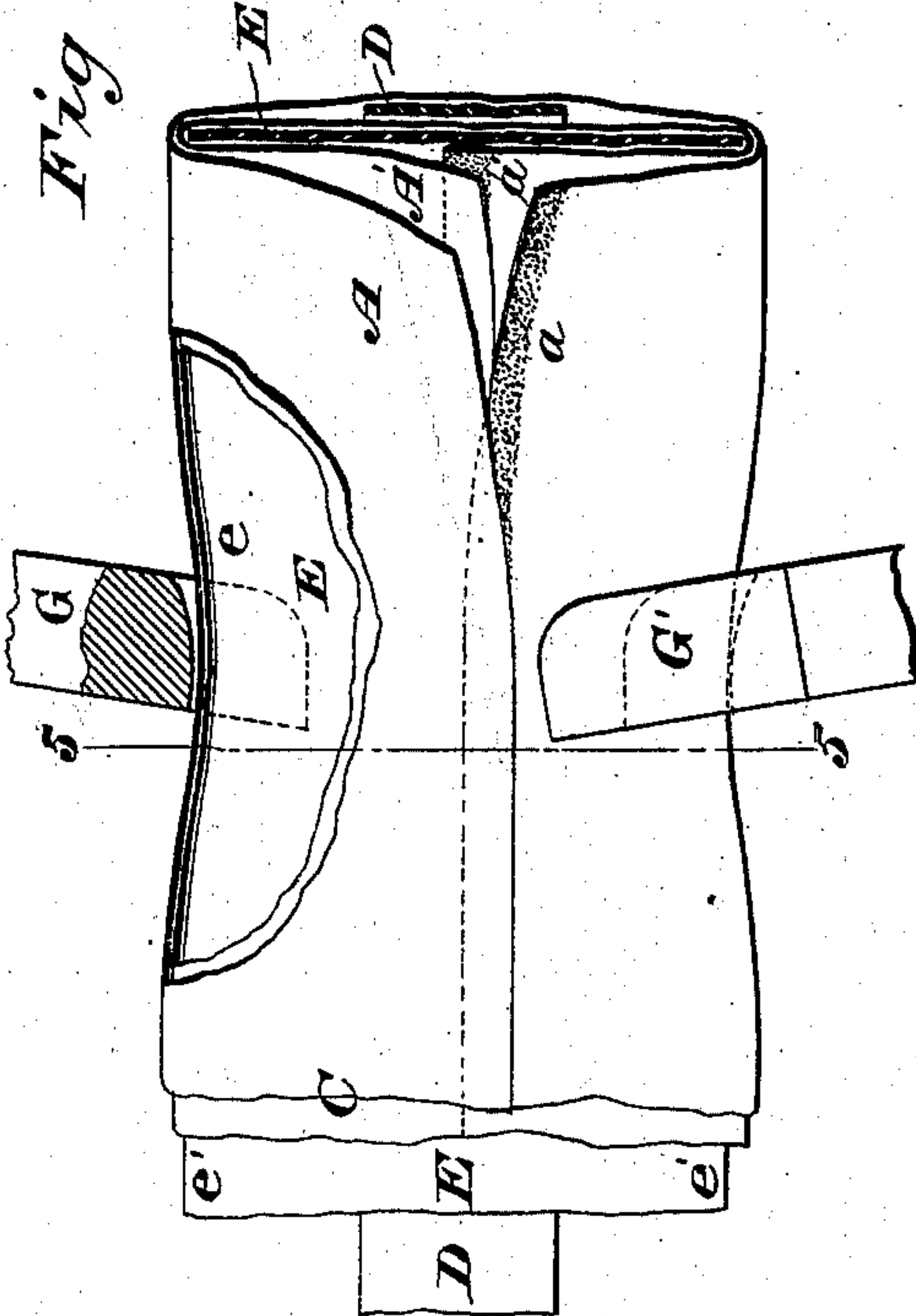
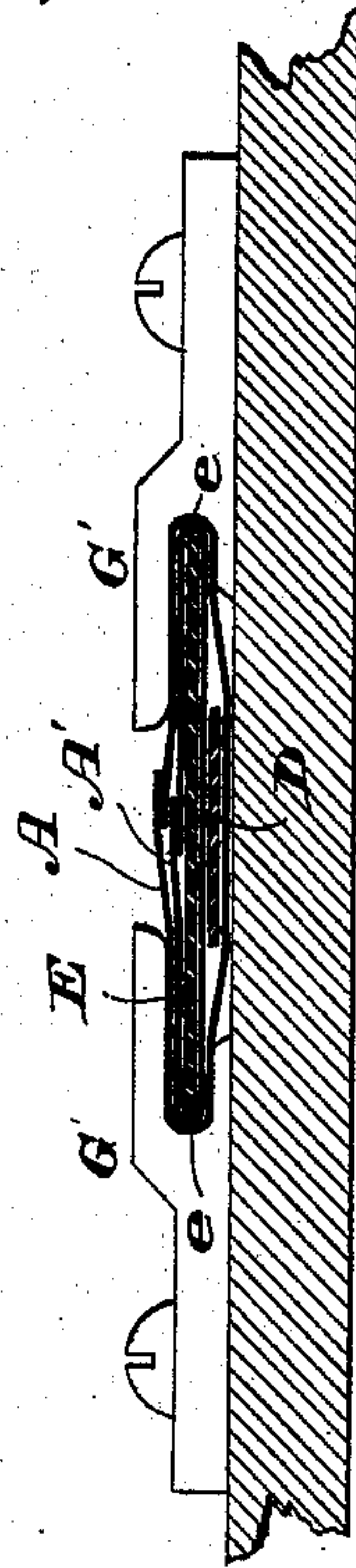


Fig 5.



INVENTOR

Frederick E Porter.

By his Attorneys

Baldwin, Hopkins & Peyton.

UNITED STATES PATENT OFFICE.

FREDERICK E. PORTER, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO RODNEY B. SMITH, OF SAME PLACE.

IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. **211,256**, dated January 7, 1879; application filed October 31, 1878; patented in England, October 18, 1878; patented in Canada, November 5, 1878.

To all whom it may concern:

Be it known that I, FREDERICK E. PORTER, of Baltimore city, in the State of Maryland, have invented new and useful Improvements in Apparatus for Manufacturing Tubes for Duplex Paper Bags, &c., of which the following is a specification:

My invention relates to improvements in automatically producing duplex tubes and double tubular blanks for the manufacture of paper bags, &c., essentially such as shown and described in United States Letters Patent granted me and my assignee June 18, 1878, No. 205,133.

The object of my present improvements is to produce flat duplex tubes and double tubular blanks with the inner or lining tube snugly fitting in or filling out and ununited with the outer or enveloping tube thereof, whereby the one tube will support and strengthen, and in turn be sustained and re-enforced by, the other.

My invention consists in a novel organization of mechanism and in certain combinations of devices, such improvements as are claimed being hereinafter specifically designated.

In the accompanying drawings, which show so much of suitable apparatus as is necessary to illustrate my present invention, when considered in connection with my patented improvements hereinbefore referred to, all the improvements herein claimed, or means sufficient for carrying out such improvements, in connection with my previously-patented improvements, are embodied.

Figure 1 is a plan or top view with the paper about the formers; Fig. 2, a longitudinal vertical section on the line 2 2 of Fig. 1. Fig. 3 is a view partly in plan and partly in horizontal transverse section in different planes on the line 3 3 of Fig. 2, the paper being omitted to clearly show the top former. Fig. 4 is a plan or top view on an enlarged scale with parts broken away, representing the manner of forming and contracting the double tube to give it, preliminarily, a width less than that to which it is afterward expanded; and Fig. 5, a vertical transverse section on the line 5 5 of Fig. 4.

Such parts only of a fully-organized paper-tubing or paper-bag machine as are deemed

essential to convey a correct understanding of my invention will be described. Particular reference is made to Letters Patent No. 205,133, my present improvements being especially adapted for use in connection with the mechanism therein shown and described or suggested. The changes made in said patented improvements will fully be described, and the manner in which the new parts are substituted for the old will clearly be indicated.

Two independent long sheets or webs of paper, paper and linen, &c., A A', are supplied to two formers, with their edges *a a'* separately pasted in such manner as to prevent the sheets being united by the paste on one sheet adhering to the other, and are drawn along the formers by supporting and drawing rollers B B', the duplex tubular blanks being successively severed from the projecting end of the finished double tube C, and subsequently made into bags or used for other purposes, as stated in the patent referred to.

The bottom former, D, is made narrow throughout, except at its cutting end, as it was suggested it might be in the referred-to patented improvements, and, in part, for the same purpose as in my prior invention—that is, to guard against making the outer or covering tube too large. The top former, E, is, by preference, made quite wide, as compared with the bottom former, throughout, except at the neck E' and at a point remote from its heel or inner suspended end and near the former-supporting and seam-pressing rollers F F', where it is narrowed, cut away, or recessed, as at *e e*. These recesses terminate in the shoulder *e'*, where the former again widens out to the width of its main part, or, it may be, to a slightly greater width. The shoulder extends to or slightly beyond the vertical plane of the longitudinal center of the roller F', so as to be supported by it above the bottom former, D, as explained in my before-mentioned prior patent. The serrated end of the bottom former is, by preference, made slightly narrower than the corresponding cutting end of the top former, as suggested in my prior patent, and the serrated end of the top former should be of a width somewhat less than that of the shoulder or widened part *e'*, from which the

neck E' projects. The rollers B B' and F F' support the former, as will be readily understood by referring to my previous patent of June 18, 1878.

At the sides of the narrowed part or curved recesses *e e* of the top former are adjustably secured two tube-contracting or edge-pressing forming plates or guides, G G'. These tube-pressing plates embrace the former at its edges and the partially-formed duplex tube at its opposite edges, and press inward both the inner and the outer papers or partially-formed tubes together, to give them preliminarily, and preparatory to pressing down their independent seams or pasted edges, a width less than that to which they are subsequently spread when expanded on the shoulder *e'* of the former. When the two incomplete tubes are thus spread from within, or immediately after so spreading them together, the rollers F F' press down the pasted seams and flatten out and complete the tubes, which are not connected with each other, except by mere frictional contact, and the finished duplex tube is severed into lengths for bag-blanks, &c., as in my prior patent.

The edge-guides or tube-contracting forming-plates G G' are forked or slotted at their inner or free ends, as clearly shown in the drawings, to insure proper action.

The operation of the mechanism, and the manner of simultaneously first partially forming the two independent or ununited tubes, one within the other, and, next, giving to the partially-formed duplex tube a width less than that which it is afterward caused to assume by the expansion of the inner tube, and, through or by the way of it, the outer tube, will readily be understood without further description.

It is important that the two sheets have the independent parallel lines of paste applied to or near their edges, as described, in such manner that when the tubes are formed the one will be wholly unconnected by the paste with the other, so that imperfection of or injury to one tube will not affect the other. Should an accidental spreading or occasional improper application of the paste cause the one tube to stick to the other at a point anywhere along the seams, the tubes, after being severed into blanks, must be separated at such point to secure the full advantage of the independent strength of the tubes when formed into a bag by uniting them at the bottoms only, as in my

prior patent. The snug fit of the lining-tube in the outside tube is absolutely essential to the attainment of the object in view—namely, reciprocal re-enforcement or the strengthening of one tube by the other to the fullest extent.

Obviously, my improvements may be modified somewhat by the employment of mechanism differing in some respects from that specifically described, and shown by the drawings. For instance, instead of the forked guides or tube-edge-pressing plates, grooved forming-rollers might be used. The top former may be made quite narrow from its side recesses *e e* to its heel or suspended end. A recess in one side only of the former might, measurably, serve, in connection with one of the guides or edge-pressing plates, or its equivalent, to give the reduced starting or preliminary width of the tube. I have, however, found the identical mechanism specifically described, and shown by the drawings, to answer well for manufacturing the peculiar double tubes, and prefer to employ it.

I claim as of my own invention—

1. The combination, substantially as hereinbefore set forth, of the narrow bottom former, the wide top former, cut away or recessed at its sides, and provided with a shoulder, and means, substantially such as described, for pressing the partially-formed double tube inward at its edges, whereby the incomplete tube is formed, at the recesses in the former, of a less width than that to which it is subsequently spread by the former-shoulder preparatory to pressing the pasted seams.

2. The combination, substantially as hereinbefore set forth, of the flat or plate former E, suspended at its heel or inner end, and having the shoulder *e'*, the former-supporting and seam-pressing rollers, near which rollers and between them and its heel end the former is recessed, as at *e*, and the edge-pressing plates G G', acting on the edges of the paper or partially-formed tube about the former at its recessed part before the tube reaches the former-shoulder and seam-pressing rollers, where it is completed, as set forth.

In testimony whereof I have hereunto subscribed my name.

FREDERICK E. PORTER.

Witnesses:

P. E. CHAPPELL,
EDMUND G. WICKS.