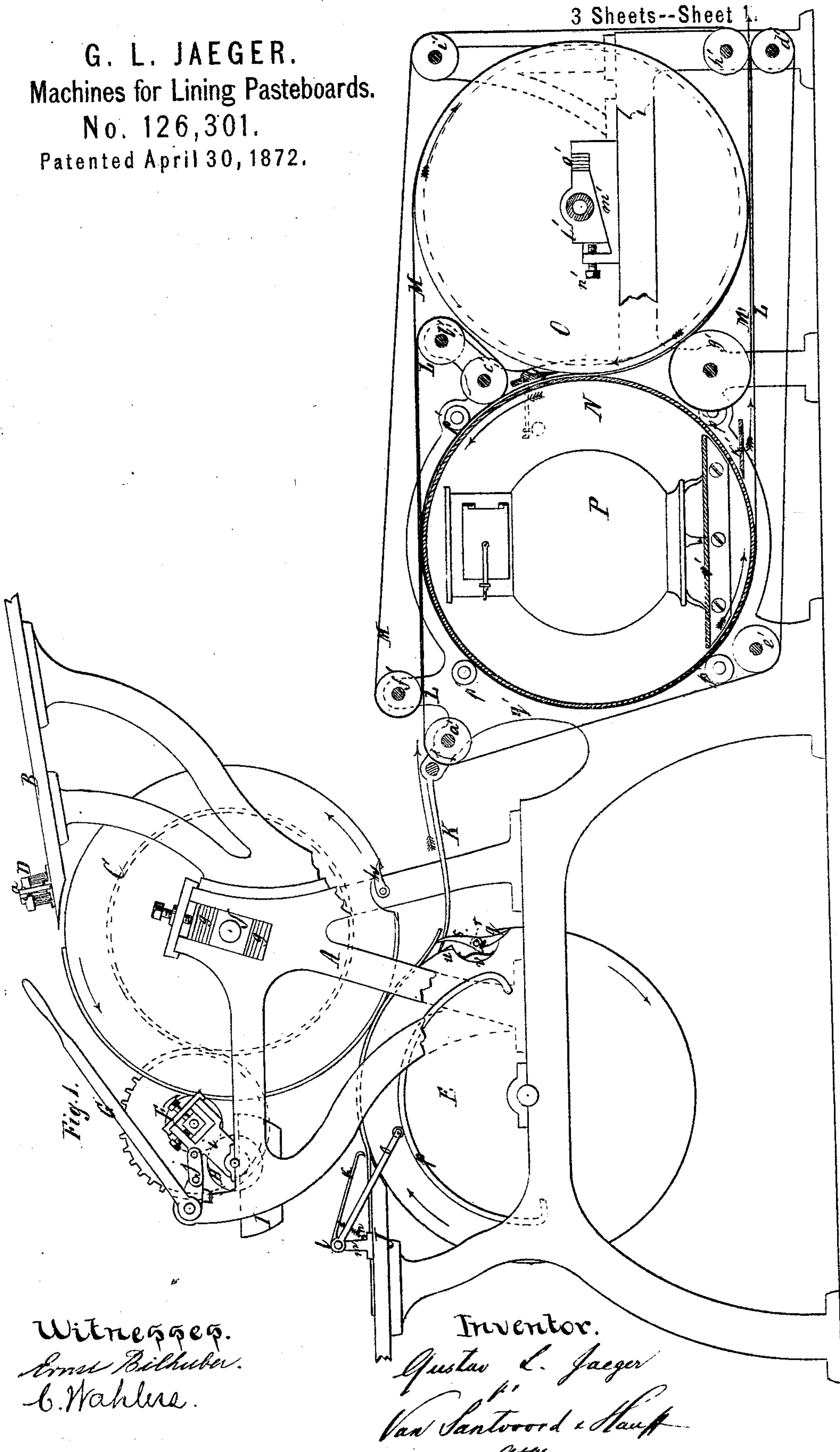


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Machines for Lining Pasteboards.  
No. 126,301.  
Patented April 30, 1872.

3 Sheets--Sheet 1.



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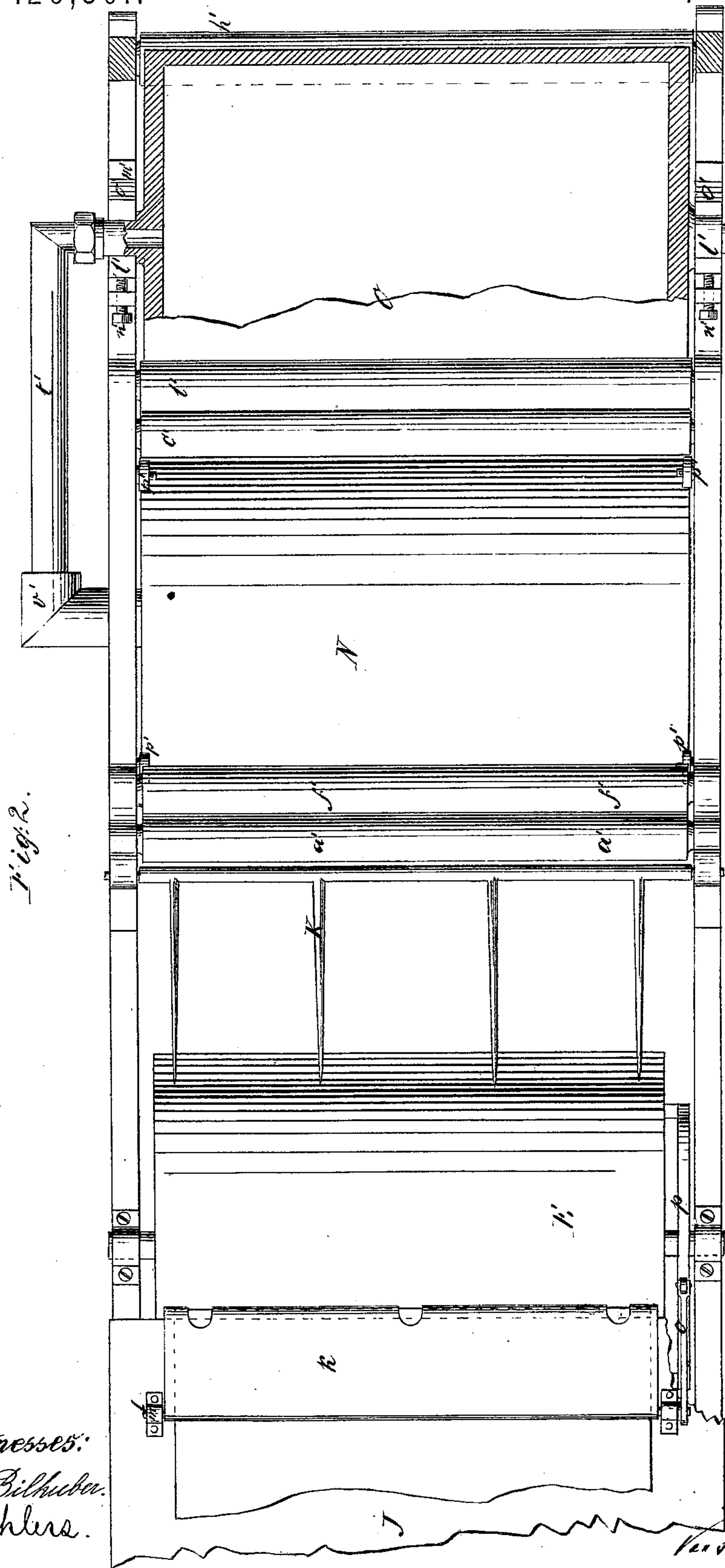


Fig. 2.

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Fig. 3.

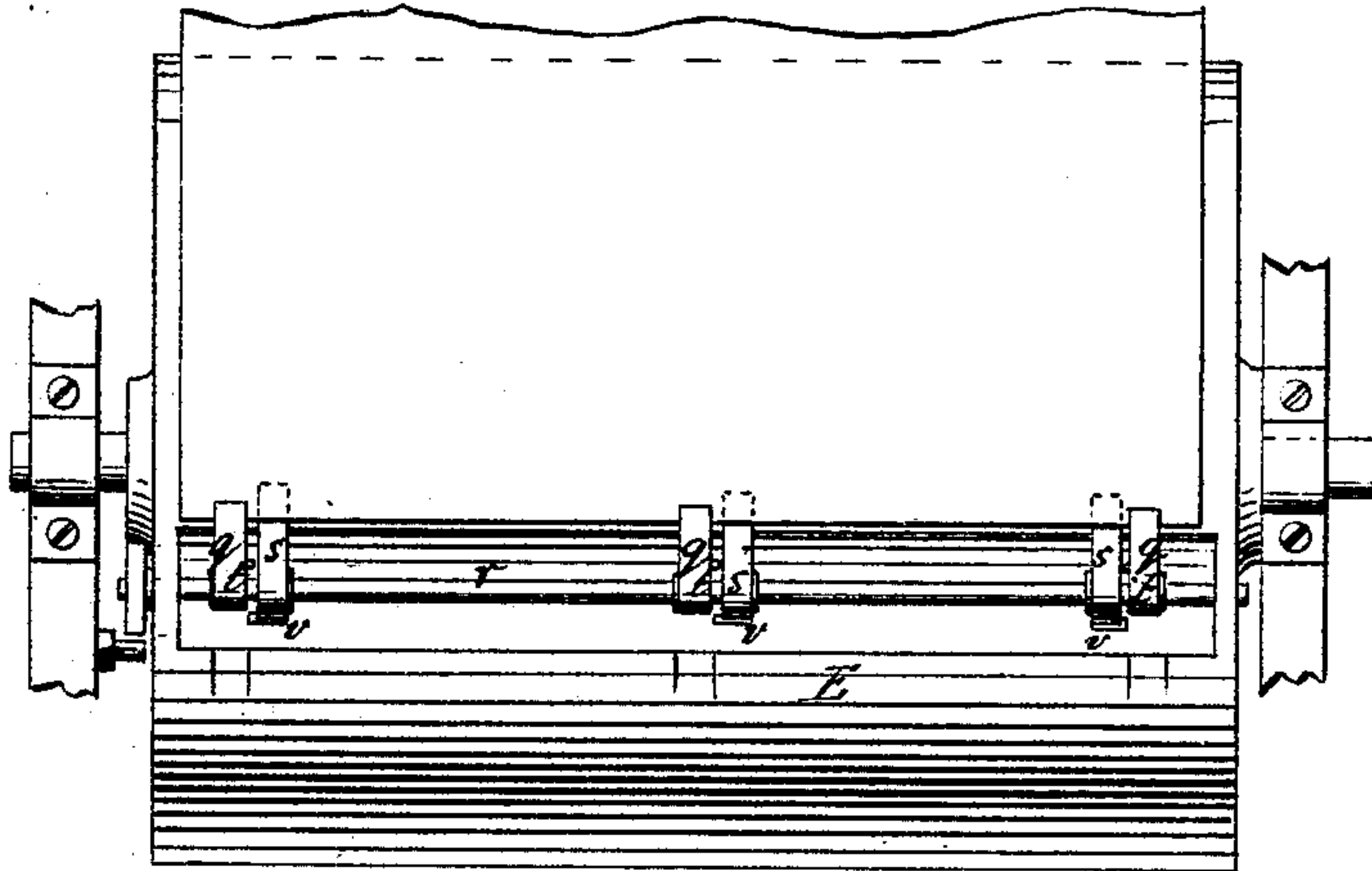


Fig. 4.

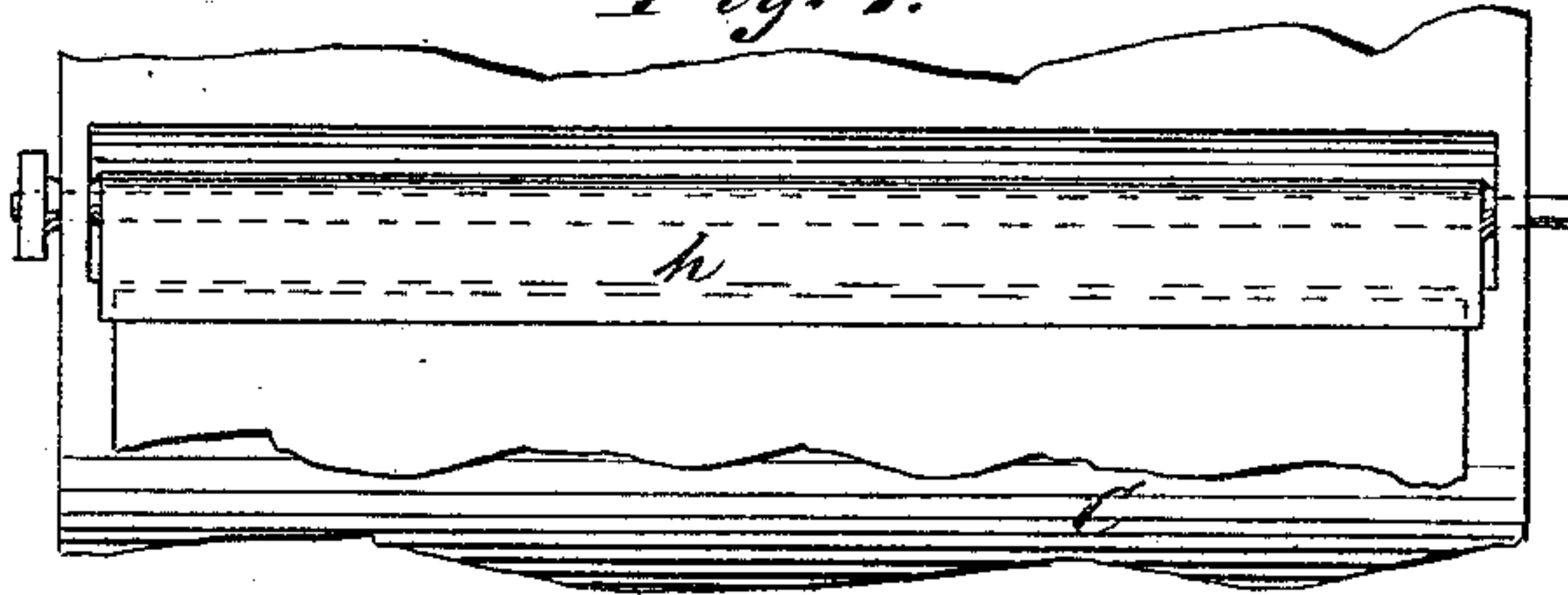


Fig. 5.

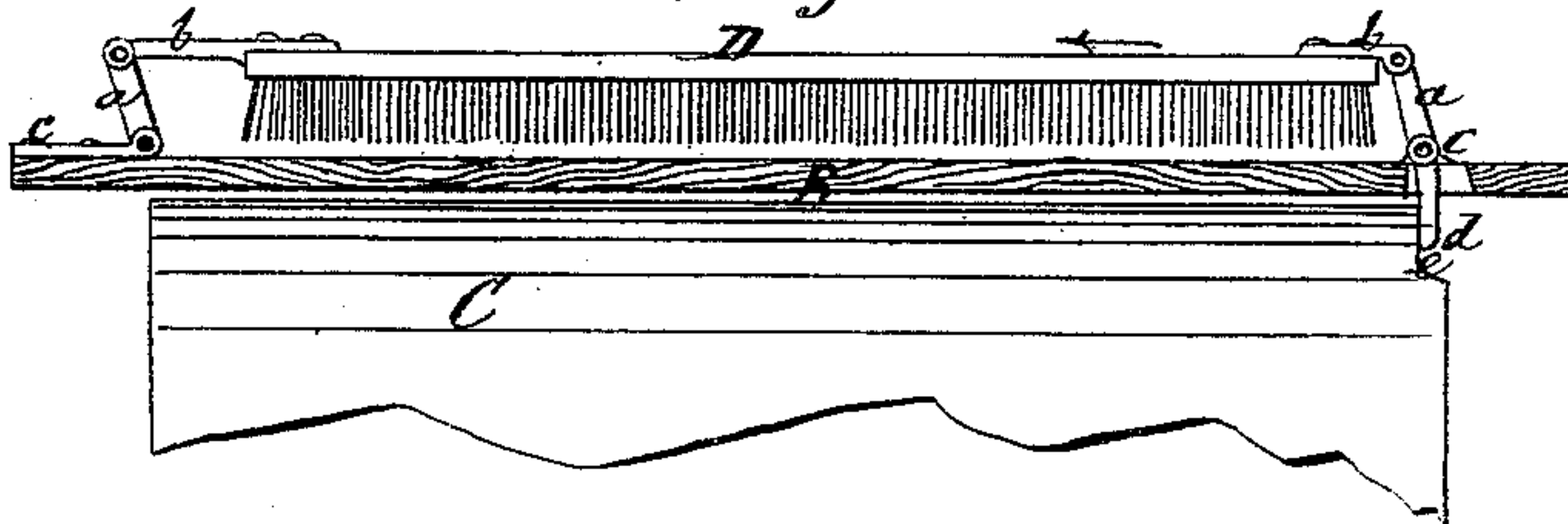
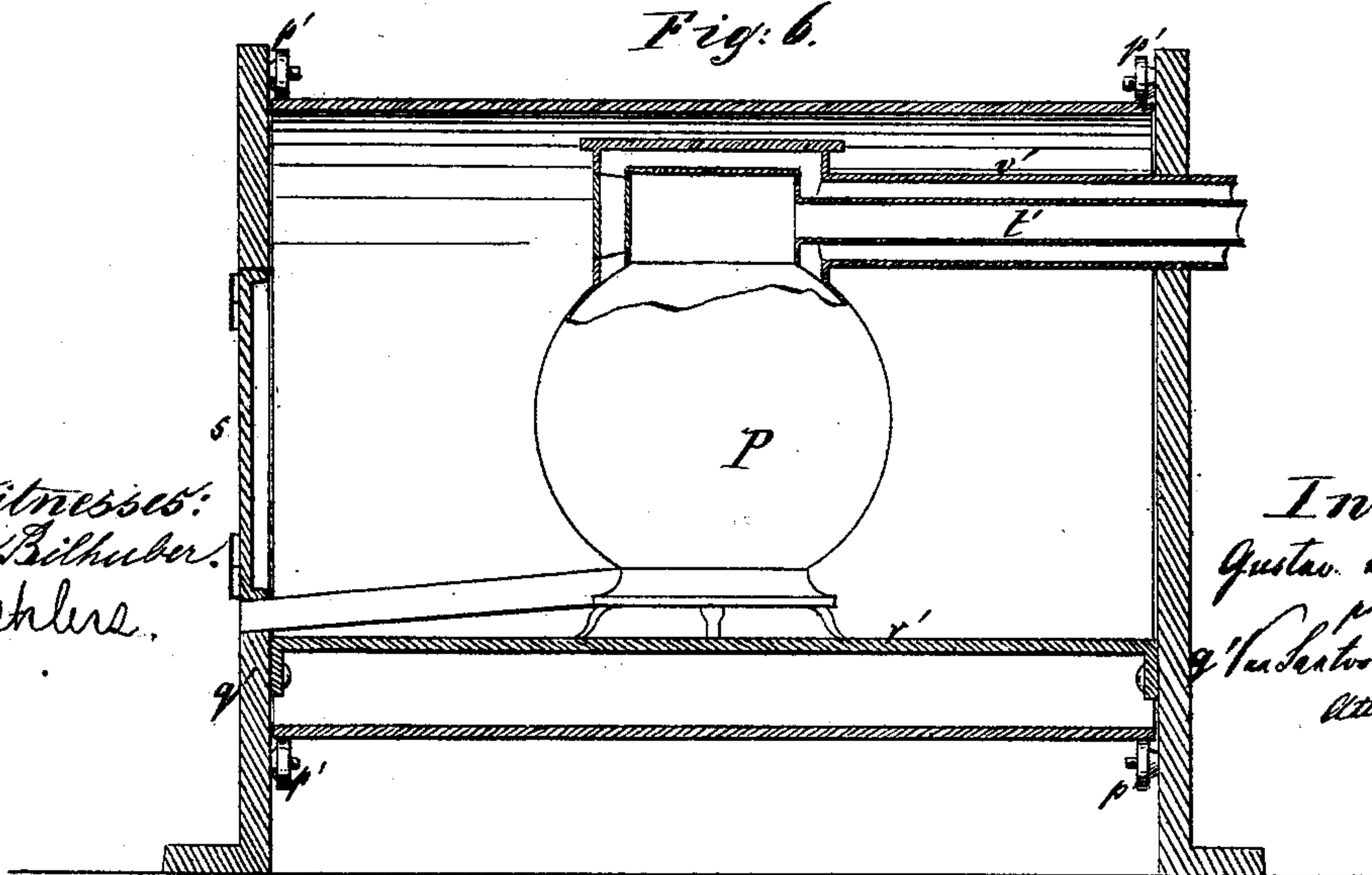


Fig. 6.



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# UNITED STATES PATENT OFFICE.

GUSTAV L. JAEGER, OF NEW YORK, N. Y.

## IMPROVEMENT IN MACHINES FOR LINING PASTEBOARD.

Specification forming part of Letters Patent No. 126,301, dated April 30, 1872.

*To all whom it may concern:*

Be it known that I, GUSTAV L. JAEGER, of the city, county, and State of New York, have invented a new and useful Improvement in Machines for Lining Pasteboards; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a side view of my invention partly in section. Fig. 2 is a plan or top view of the same partly in section. Fig. 3 is a plan of the pasteboard-cylinder detached, showing the grippers and throwing-off fingers. Fig. 4 is a plan of the paper-cylinder detached, showing the continuous grippers. Fig. 5 is a transverse section of the paper-feed board, showing the brush for removing wrinkles from the sheets of paper before the same are delivered to the paper-cylinder. Fig. 6 is a longitudinal central section of my drying-drum.

Similar letters indicate corresponding parts.

This invention consists in combining with the paper-feed board and the paper-cylinder a brush which is automatically depressed upon the sheets just as the same are being delivered to the paper-cylinder in such a manner that by the action of said brush the sheets of paper are freed from wrinkles before they are delivered to the paper-cylinder; also, in combining with the pasting-cylinder two arms, which form the bearings for said cylinder and swing on pivots, and which connect, by toggle-levers or other suitable mechanism, with a hand or foot lever in such a manner that if, from some cause, no sheet of paper is delivered to the paper-cylinder the pasting-cylinder can be thrown back, preventing the surface of the paper-cylinder from being soiled by paste; further, in combining with the pasteboard-cylinder a gauge, which determines the correct position of each board to be delivered to the cylinder, and which is raised automatically by the action of a cam on the side of the cylinder at the moment the grippers take hold of the pasteboard; also, in combining with the grippers a series of throwing-off dogs, whereby the pasteboards are effectually prevented from adhering to the pasteboard-cylinders and their delivery to the drying apparatus is insured; further, in

the arrangement of a stove in the interior of the drying-drum, said drum being made to revolve round the stove in such a manner that the heat of the drum can be increased or diminished to any desired extent, and also kept at a uniform degree, as may be required; also, in combining with the drying-drum a calender-roller, which has its bearings in journal-boxes set on inclined planes in such a manner that the same is caused to bear against the surface of the drying-drum by its inherent gravity or by springs, whereby the sheets are uniformly calendered while in a half-dry state; further, in combining with the calender-roller and drying-drum two endless aprons, in such relation to each other that the lined pasteboard is carried through between said roller and drum, and around the latter, without being subjected to an objectionable bend or curve, and the boards are dried first on one side and then on the other.

In the drawing, the letter A designates a frame, which forms the bearings for the working parts of my machine. On the upper part of this frame is secured a board or table, B, over which the sheets of paper are fed to the paper-cylinder C. Across the feed-board B extends a brush, D, which is supported by links *a*, pivoted at their upper ends to arms *b* extending from the back of the brush, and at their lower ends to brackets *c* fastened to the feed-board. (See Fig. 5.) From one of the links *a* extends an arm, *d*, down through an aperture in the feed-board, and a cam, *e*, formed on one side of this cylinder, acts against this arm and causes the brush to swing in the direction of the arrow marked near it in Fig. 5, bringing it to bear on the sheet of paper previously passed through under it. By this action of the brush D the sheet of paper is spread out flat upon the feed-board, and it is delivered to the paper-cylinder free from wrinkles. The paper-cylinder has its bearings in boxes *f*, which are set each between two springs, *g*, Fig. 1, so that said paper-cylinder can accommodate itself freely to the varying thicknesses of pasteboards passed through between it and the pasteboard-cylinder E, while it exerts always a sufficient pressure on the pasteboards to cause the sheets of paper to adhere to the same. The sheets of paper are taken from the feed-board B by means of a griper, *h*, (see Fig.



4,) which extends across the entire length of the paper-cylinder, so that the same will hold the edge of the sheet of paper close down upon the surface of said cylinder and prevent any paste from getting in between the paper and the cylinder. If the grippers are placed at certain distances apart, as usually practiced in printing-presses, it is impossible to keep the paste from passing under the sheet, whereby the correct operation of the machine is disturbed. The paste is applied to the sheets of paper by means of a pasting-cylinder, F, which has its bearings in boxes (Fig. 1) secured in arms *i*, which are pivoted to the frame A and connect, by links or toggle-joints *j*, with a lever, G, that can be operated by hand or foot. If this lever is in the position shown in Fig. 1 the pasting-cylinder bears against the surface of the sheets of paper carried by the paper-cylinder, and said sheet is supplied with paste; but if, from accident or carelessness, no paper has been delivered to the paper-cylinder, the lever G is thrown back so as to remove the pasting-cylinder from contact with the paper-cylinder, and prevent the surface of the latter from being soiled. The pasting-cylinder is supplied with paste by means of a distributing-roller, H, which dips into the paste-well I, and it is geared up so that its superficial velocity is smaller than that of the paper-cylinder, and that by its action the paper is spread and stretched flat on this last-named cylinder. The pasteboards are fed to the pasteboard-cylinder E over the table J, their correct position being insured by means of a gauge, *k*, which is hung on a shaft, *l*, having its bearings in standards *m* rising from said table, said gauge being depressed by the action of a spring, *n*. On the end of the shaft *l* is mounted a lever, *o*, and on the side of the pasteboard-cylinder is secured a cam, *p*, Fig. 1, which strikes the lever *o* at the proper moment, causing the same to raise the gauge so that the pasteboard can be carried off by the action of the grippers *q* on the pasteboard-cylinder. Said gauge extends across the entire length of the pasteboard-cylinder, being provided with notches to allow the grippers to take hold of the board; or the gauge may be made in sections, one near each end of the pasteboard-cylinder and one or more between, so as to insure a correct position of each pasteboard to be delivered to said cylinder. I prefer to use a gauge extending across the entire cylinder, because it holds such pasteboards, which are curved or bent down flat upon the surface of the cylinder. The grippers *q* are mounted on a shaft, *r*, situated in a cavity in the cylinder and extending across its whole length, the construction and operation of said grippers being the same as on ordinary printing-presses. With the grippers *q* are combined throwing-off dogs *s*, which are mounted loosely on the shaft *r*, one close to each of the grippers. (See Fig. 3.) From the edge of each gripper projects a finger, *t*, which catches beneath the adjoining dog, so that when the grippers are thrown back

to the position shown in Fig. 1 the dogs are raised. When the grippers are turned down upon the pasteboard the points of the dogs drop into cavities *u*, Fig. 1, in the cylinder, being retained in that position by the action of springs *v* bearing on toes *w*, which project from the rear ends of said dogs. When the grippers are thrown open the springs *v* are strained so that the dogs fall back in said cavities as soon as the grippers begin to close and before they bear down upon the end of the pasteboard. By the grippers the pasteboard is retained on the pasteboard-cylinder and carried in between the same and the paper-cylinder, and as it comes in contact with the sheet of paper spread on this last-named cylinder, the paper being at that moment released by its grippers adheres to said pasteboard, and when the pasteboard-cylinder reaches the position shown in Fig. 1 the grippers *q* are thrown back and the dogs *s* deliver the pasteboard to the grate K, over which it passes to and between the endless aprons L M. One of these aprons, L, extends from a roller, *a'*, round rollers *b' c'*; thence back over the drying-drum N, and from this drying-drum, round rollers *d' e'*, back to the roller *a'*. The other apron, M, extends from a roller, *f'*, round the calender-roller O; thence over a roller, *g'*, to a roller, *h'*; and from this roller over a roller, *i'*, back to the roller *f'*. Between the drying-drum and the calender-roller is a doctor, *j'*, the edge of which is held in contact with the periphery of the calender-roller by a weight or other means; and the edge of another doctor, *j'*, extends close to the periphery of the heating-drum. The lined pasteboard, on passing from the grate K, is received between the two aprons L M and carried in a straight line over the heating-drum to the calender-roller, where it is turned down in a gentle curve and then carried up between said calender-rollers and the roller *g'*, to be received between the heating-drum and the calender-roller. The doctor *i'* prevents the pasteboard from adhering to the calender-roller and compels the same to travel in between the roller *c'* and the drying-drum, where it is received by the apron L, carried over the drying-drum, and delivered between the lower branches of the aprons L M, to be discharged between the rollers *d' h'*. The shaft of the calender-roller O has its bearings in boxes *l'*, which are set on inclined planes *m'*, so that the inherent gravity of said calender-roller causes the same to bear against the drying-drum and to produce a calendering effect on the half-dried sheet, said sheet being finally dried in its passage over the heating-drum. With each of the boxes *l'* and the inclined planes *m'* is combined a set-screw, *n'*, and a spring, *o'*, the latter to allow the calender-roller to accommodate itself to the varying thicknesses of the pasteboard, and the former to regulate the position of the calender-roller in regard to the drying-drum. The drying-drum N (see Figs. 1 and 6) consists of a cylinder which is open at both ends, and supported by



rollers  $p'$  secured to upright plates  $q'$ , which are fastened down to the bed of the machine. Said upright plates are connected by a platform,  $r'$ , (see Fig. 6,) which forms the support for a stove, P. The drum N, which receives its motion from the apron L, is thus caused to revolve round the stove P, and by means of said stove the drum can be heated to any desired degree. In one of the stationary upright plates  $q'$  is a door,  $s'$ , through which access can be had to the stove for the purpose of attending to the fire; and the smoke is carried off through a flue,  $t'$ , extending out through either of the upright plates. With the flue  $t'$  may be combined a hot-air flue,  $v'$ , to utilize the waste heat. The stove P may be of any desired construction, so that the direct action of the heat of a fire is utilized for heating the drum N; and I prefer this means of heating said drum to steam or hot air, because by the stove I am enabled to regulate the heat without difficulty; and, furthermore, the object can be accomplished with greater economy. By the combination of the two aprons L M with the calender-roller O and drying-drum N the lined pasteboard is carried through between said roller and drum, and round the latter, without being subjected to any short bends or curves, so that the paper is not liable to separate from the pasteboard, and the lined pasteboards on being discharged from the apparatus are dry and fit for immediate use.

It must be remarked that the calender-roller O will also be so constructed that it may be heated either by the waste heat from the drying-drum or by steam or hot air introduced through its hollow gudgeons, and as the board passes over the calender-roller it is first dried on one side, and then it is reversed and dried on the other side, by contact with the drying-drum.

What I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of a brush for spreading the paper on the feed-board leading to the paper-cylinder, said brush being actuated by a cam on the side of the paper-cylinder, substantially in the manner herein shown and described.

2. The grippers  $h$ , extending throughout the entire length of the paper-cylinder, in combination with this cylinder and with the pasting-cylinder, substantially as set forth.

3. The pasting-cylinder, hung in two arms which are hinged to the main frame and connect with a lever capable of being actuated by hand or foot, substantially as described, so as to allow of throwing the pasting-cylinder out of contact with the paper-cylinder whenever it may be desirable.

4. The gauge  $k$ , in combination with the pasteboard-cylinder, which is provided with a cam to raise said gauge at the proper moment and to allow the pasteboard to be carried in by the grippers of said pasteboard-cylinder, substantially as set forth.

5. The throwing-off dogs, combined with the grippers of the pasteboard-cylinder, substantially in the manner herein shown and described.

6. The arrangement of a stove in the interior of the drying-drum, said drum being made to revolve around the stove substantially in the manner set forth.

7. The arrangement of the journal-boxes of the calender-roller on inclined planes, to allow said calender-roller to bear against the circumference of the drying-drum, substantially as described.

8. The combination of two endless aprons, L M, with the calender roller O and drying-drum N, substantially as set forth.

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