J. L. SEAVERNS.

VACUUM BOX OF PAPER MAKING MACHINES.

No. 39,500. Patented Aug. 11, 1863.

Diagram.

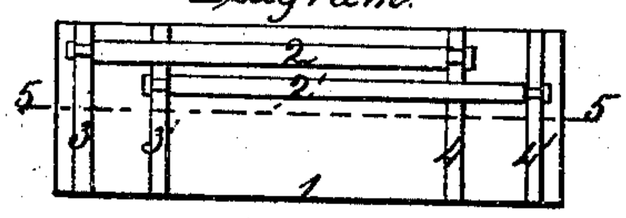


Fig: 7.

Fig: 8.

Fig: 5.

Fig: 6.

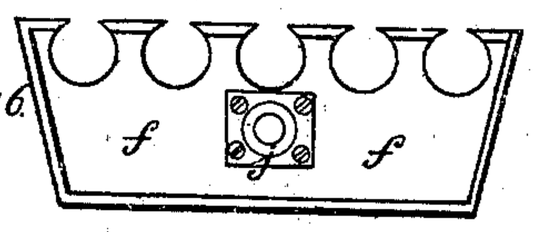


Fig: 3.

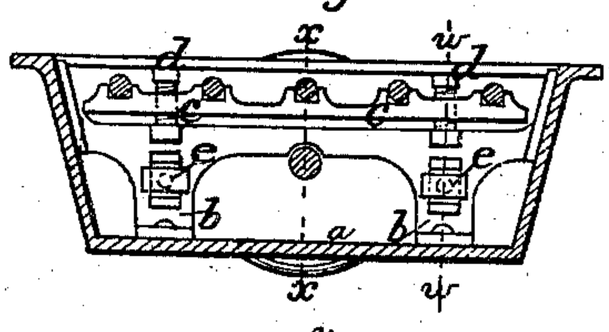


Fig: 4.

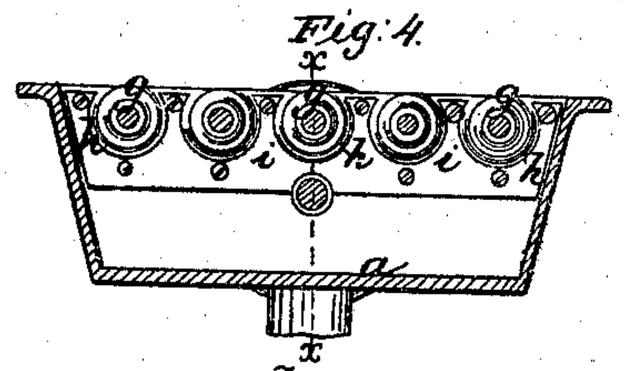


Fig: 2.

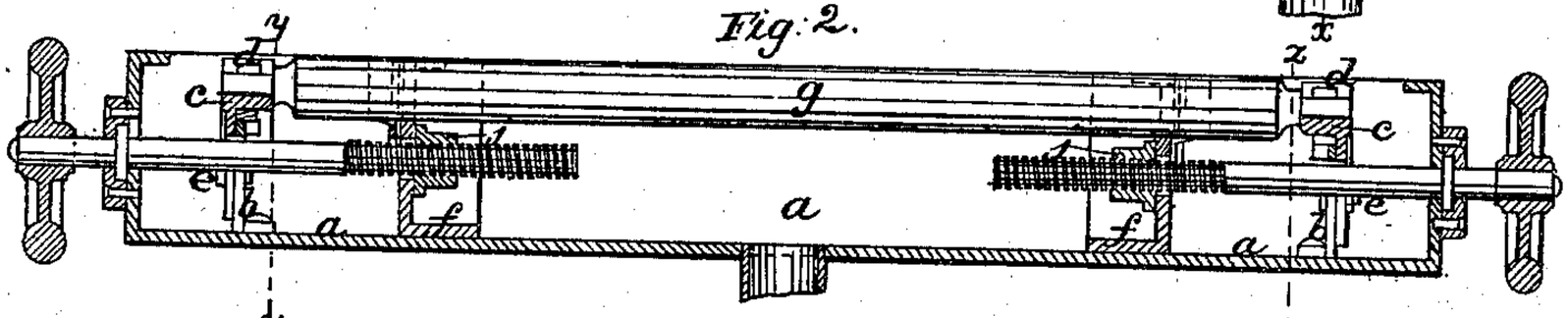


Fig: 1.

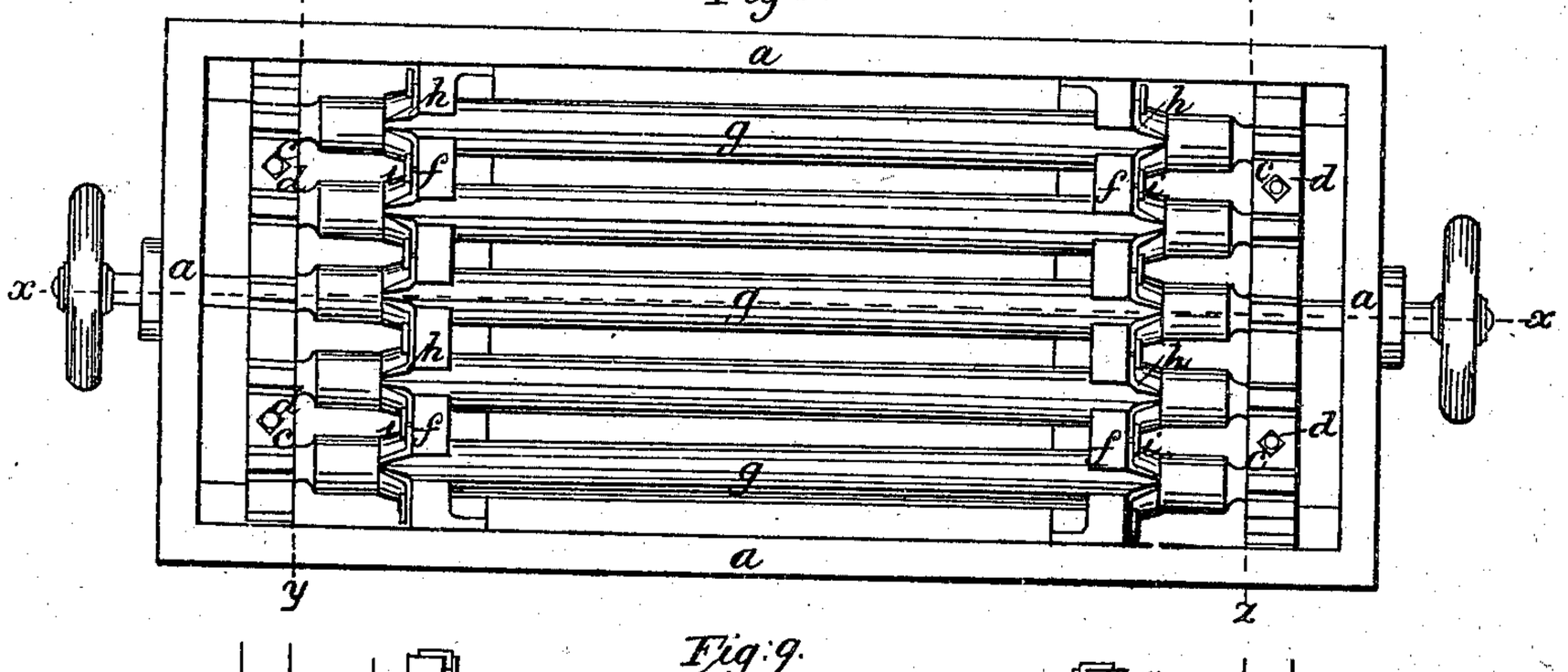
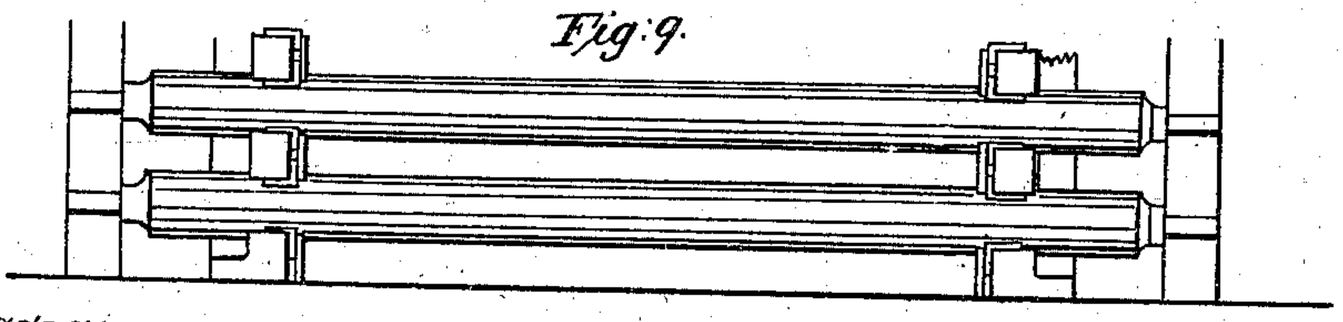


Fig: 9.



Witnesses;

A. Hallowell

J. P. Crosby

Inventor;

J. L. Seaverns

UNITED STATES PATENT OFFICE.

J. L. SEAVERNS, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN VACUUM-BOXES OF PAPER-MAKING MACHINES.

Specification forming part of Letters Patent No. **39,500**, dated August 11, 1863.

To all whom it may concern:

Be it known that I, J. L. SEAVERNS, of the city and county of Worcester, in the State of Massachusetts, have invented an Improved Paper-Machine Vacuum-Box; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

This invention is an improvement in the known devices applied to the vacuum-boxes of paper-machines to prevent wear of the wire apron. Formerly the tops of these vacuum-boxes were supplied with bars placed at but little distances apart, over which the wire apron passed, and which supported it under atmospheric pressure. This was afterward replaced by a perforated metallic plate, and this again was improved upon by an invention consisting of the introduction of rolls to support the wire apron and to reduce its wear.

My within-described invention consists in an improved application of the wire apron bearing-rolls to the vacuum-box.

In the drawings illustrating my improvement, Figure 1 is a plan; Fig. 2, a longitudinal section in the line *x x*, Figs. 1, 3, and 4; Fig. 3, a vertical cross-section in the line *y y*, showing in elevation the parts beyond, looking to the left; Fig. 4, a vertical cross-section taken in the line *z z*, showing in elevation the parts beyond, looking to the left; Fig. 5, a section taken in the line *w w*, Fig. 3. Fig. 6 comprises two views of the moving cheeks. Fig. 7 comprises two views of the packing-plates. Fig. 8 comprises two views of the packing-leather, and Fig. 9 shows a modification of the packing and the arrangement of the movable cheeks reversed from that shown in the other figures.

In the box *a*, near its ends, there are fixed cheeks *b*, which are stationary and provided with pieces *c*, in which bearings are formed, which pieces are adjustable in height by set-screws *d*, and are held in adjustment by clamp-screws *e*. The "deckle" or movable cheeks are marked *f*. The rolls *g* pass through these and are packed by cup-formed leather packings *h*, (see Fig. 8,) which are held to the movable cheeks by the plate *i*. (See Fig. 7.) The diameter of the rolls just cuts through the upper surfaces of cheeks *f*, and by means of the screws *d* and *e* the tops of all the rolls are brought and maintained exactly in the plane of the top of the box *a*. At each end of *a* there is a screw-shaft passing through and connected to the box, as shown in Fig. 2, through the stationary cheeks and working in a nut, *j*, fixed to *f*. Rotation of these screws thrusts the movable cheeks toward or draws them from the center of the box, and the distance of the cheeks *f* apart determines the width of the paper, as the "deckle-straps" move on these cheeks. The width of the wire apron being less than the distance between the outer bearings of the rolls, it will be seen that there are no ends or corners of rolls to act destructively on the apron. It will also be seen that the tops of the rolls throughout their whole lengths can be maintained perfectly in the plane of the top of the box, so that there can be no sagging of the apron from its edges to its center. The movable cheeks are provided with wide flanges, which fit closely the nicely-finished surfaces of the inside of *a*. The spaces between the ends of the box and the movable cheeks are kept filled with water, so that thereby air is prevented from passing into the space between the cheeks *f* to vitiate the vacuum formed therein, for this water keeps the cup-leather packings closely pressed around the rolls and lubricates the bearing-surfaces in these cheeks, so that if slight leaks exist water, instead of air, will pass into the space in the box between cheeks *f*. The holes in *f* are purposely made slightly larger than the diameter of the rolls, when the packing is arranged as shown in all the figures except Fig. 9. This is to permit the slight necessary adjustment of the rolls by screws *d* without lifting *f* off from the bottom of the box. When the packings are arranged as in Fig. 9, then, of course, the holes in *f* are made large enough to receive the rolls as well as to admit the packings.

By making each movable cheek *f* to extend entirely across the vacuum-box, and to correspond in shape with and fit accurately into and against the inner surface or sides of the box *a*, the movable cheek in itself forms a partition, separating the whole water-space between the cheeks *b* and *f* from the vacuum-space inside of or between the opposite cheeks *f*, and it is in this respect different from a construction of such machines wherein several

cheek-pieces are employed distinct and separate from each other, these latter being actuated by different screws and requiring troublesome and expensive packing to preserve the vacuity of the space between the cheeks. Besides this, where separate cheeks are employed at each end of the box, they require separate screws to operate them, and it is very difficult to preserve with accuracy a strictly corresponding or simultaneous outward or inward movement of the cheeks—a point of much importance in the operation of the machine in guiding the deckle-straps.

I claim—

1. The combination, with the vacuum box of a paper-machine, of a series of rolls supported in stationary bearings at each end, and provided at each end, inside of said bearings, with a movable cheek, packed where the rolls pass through it, when said cheek is made continuous or to fit closely in and against the sides of the box, as set forth.

2. In combination with the rolls of a paper-machine vacuum-box, means for adjusting the height of the stationary bearings, for the purpose specified.

In witness whereof I have hereunto set my hand this 14th day of February, A. D. 1863.

J. L. SEAVERNS.

In presence of—

J. E. MULLOWNEY,
J. B. CROSBY.