No. 785,117. PATENTED MAR. 21, 1905.

J. L. PERRY.

DRUM FOR SANDPAPERING MACHINES.

APPLICATION FILED JUNE 3, 1904.

3 SHEETS—SHEET 1.

Fig. 1

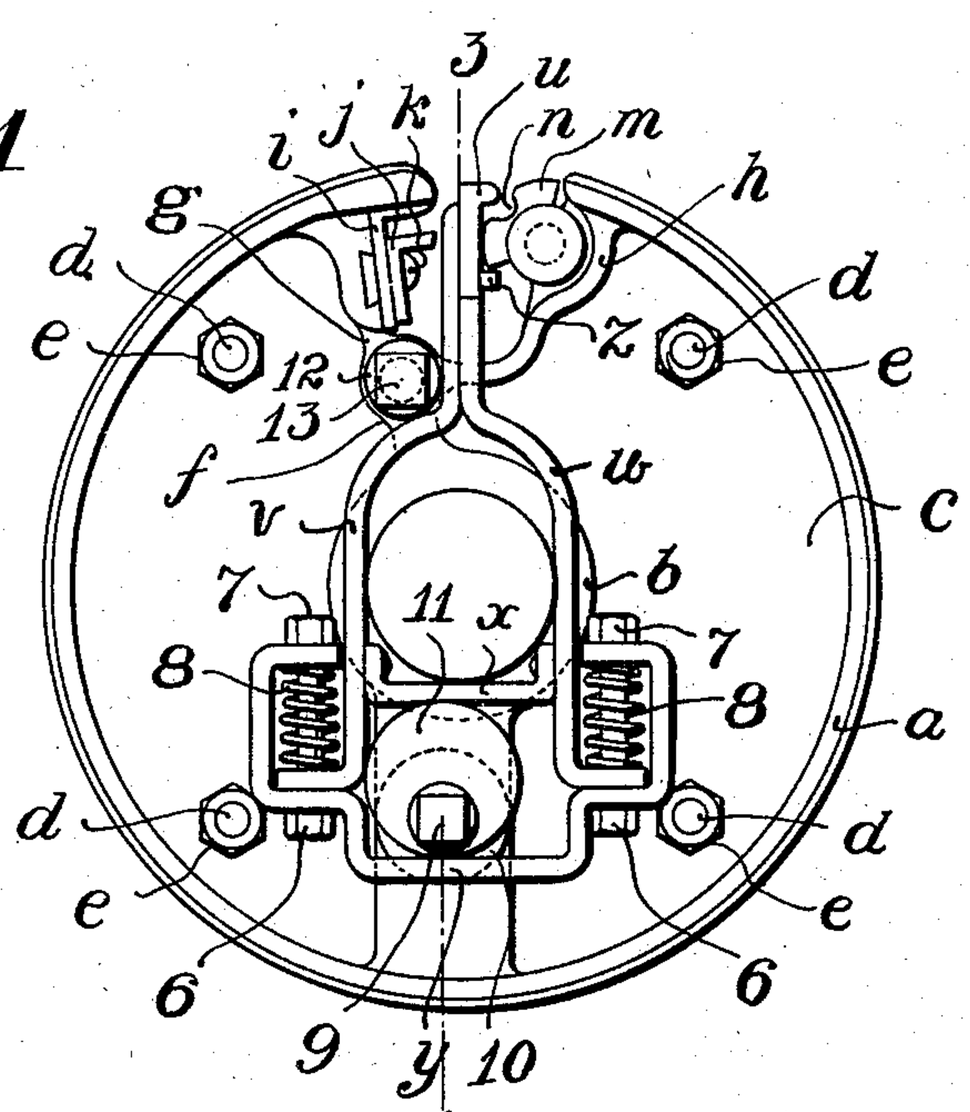

Fig. 2

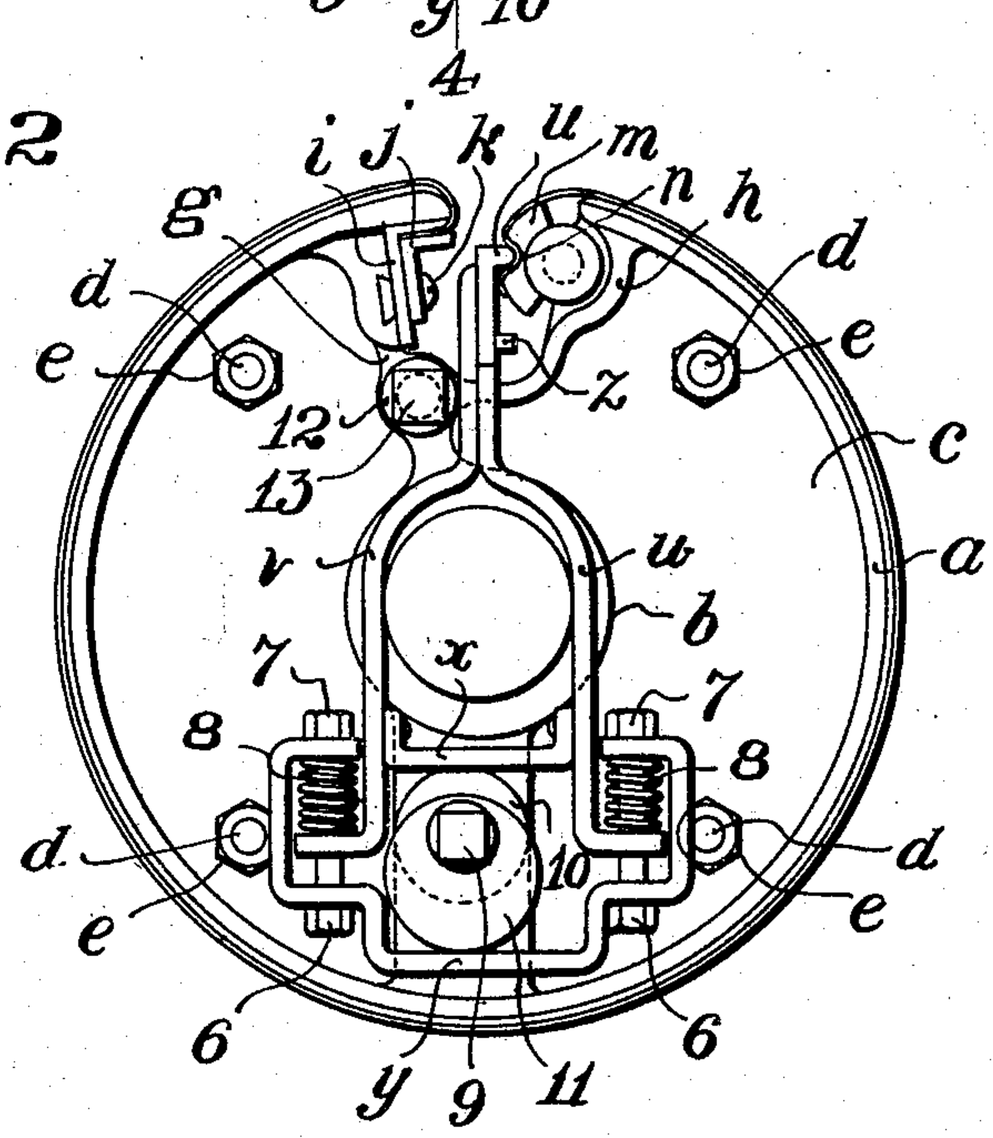

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Fig. 3

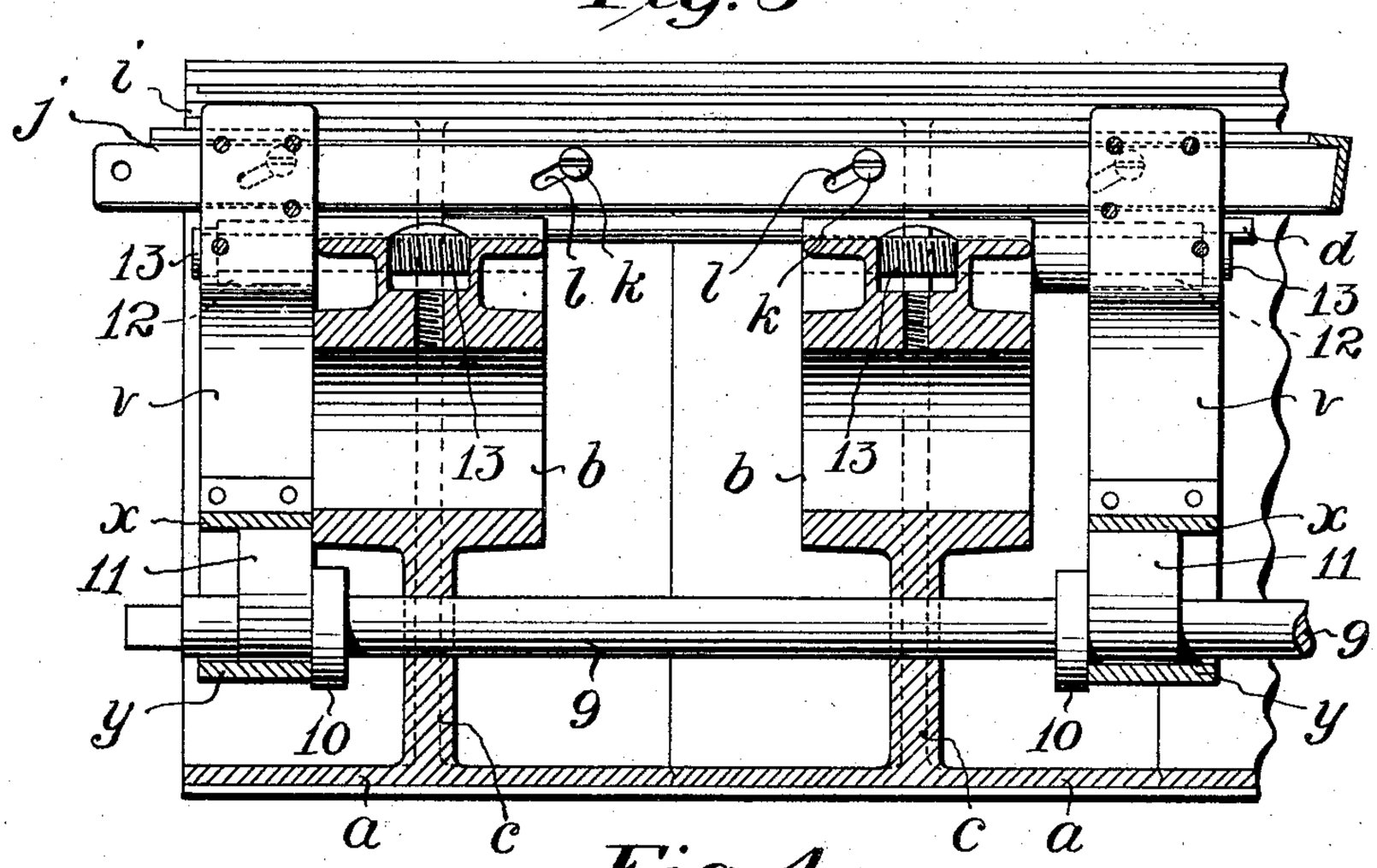


Fig. 4

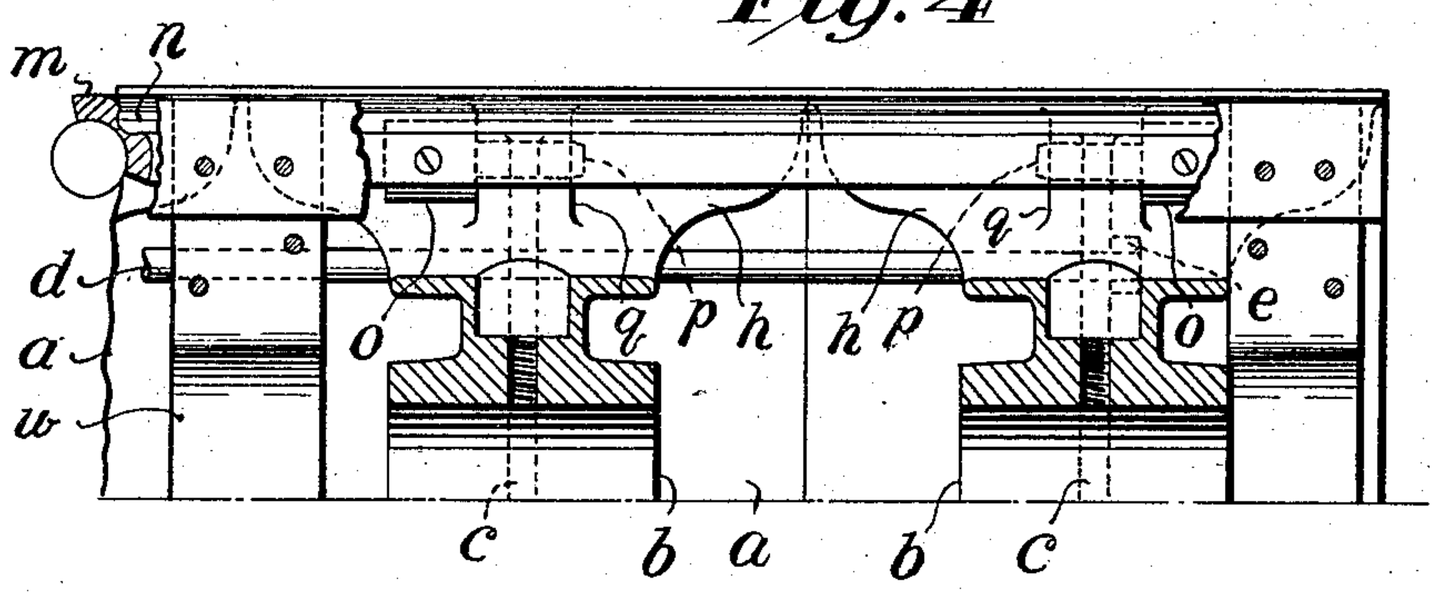
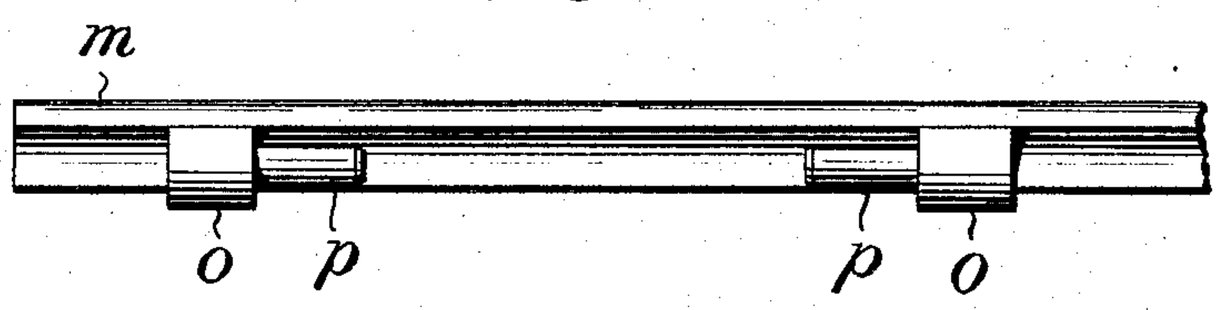


Fig. 5



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3 SHEETS—SHEET 3.

Fig. 6

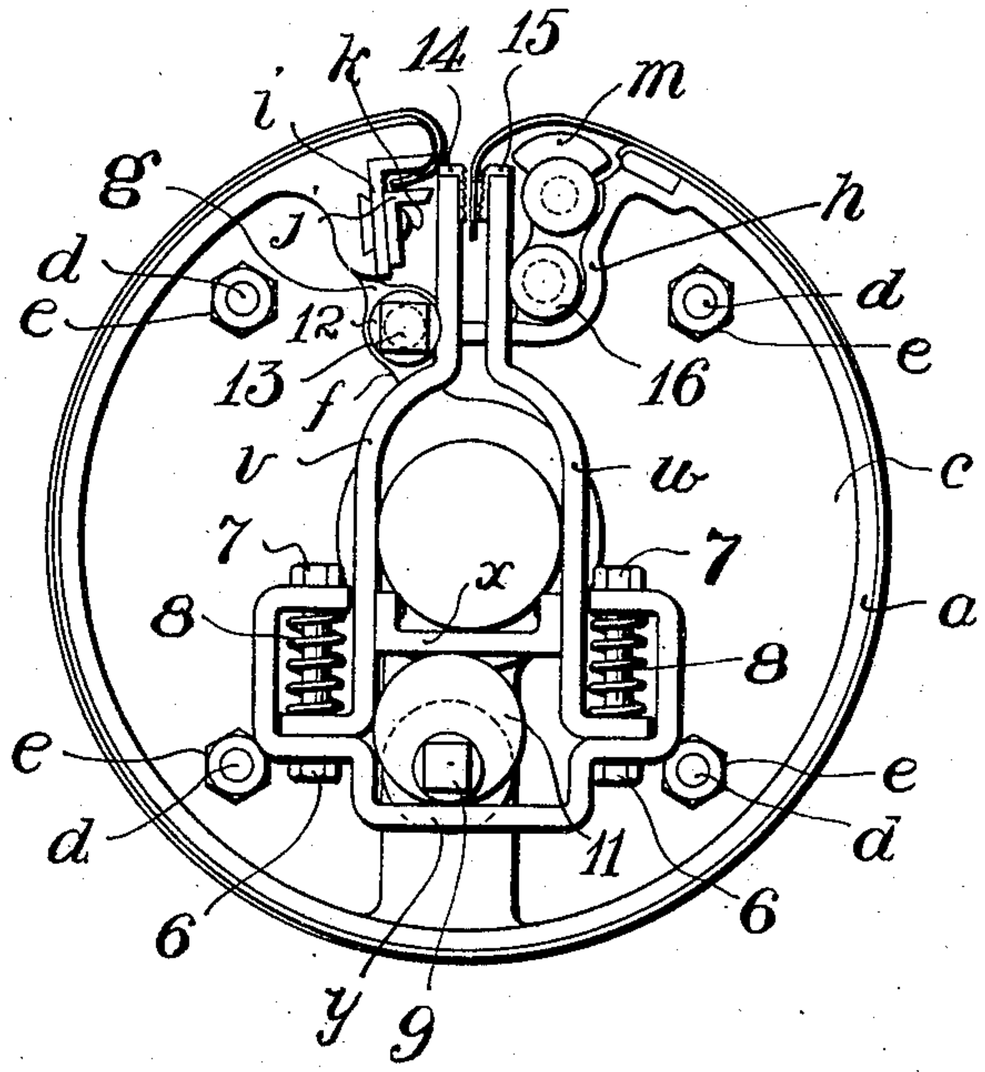
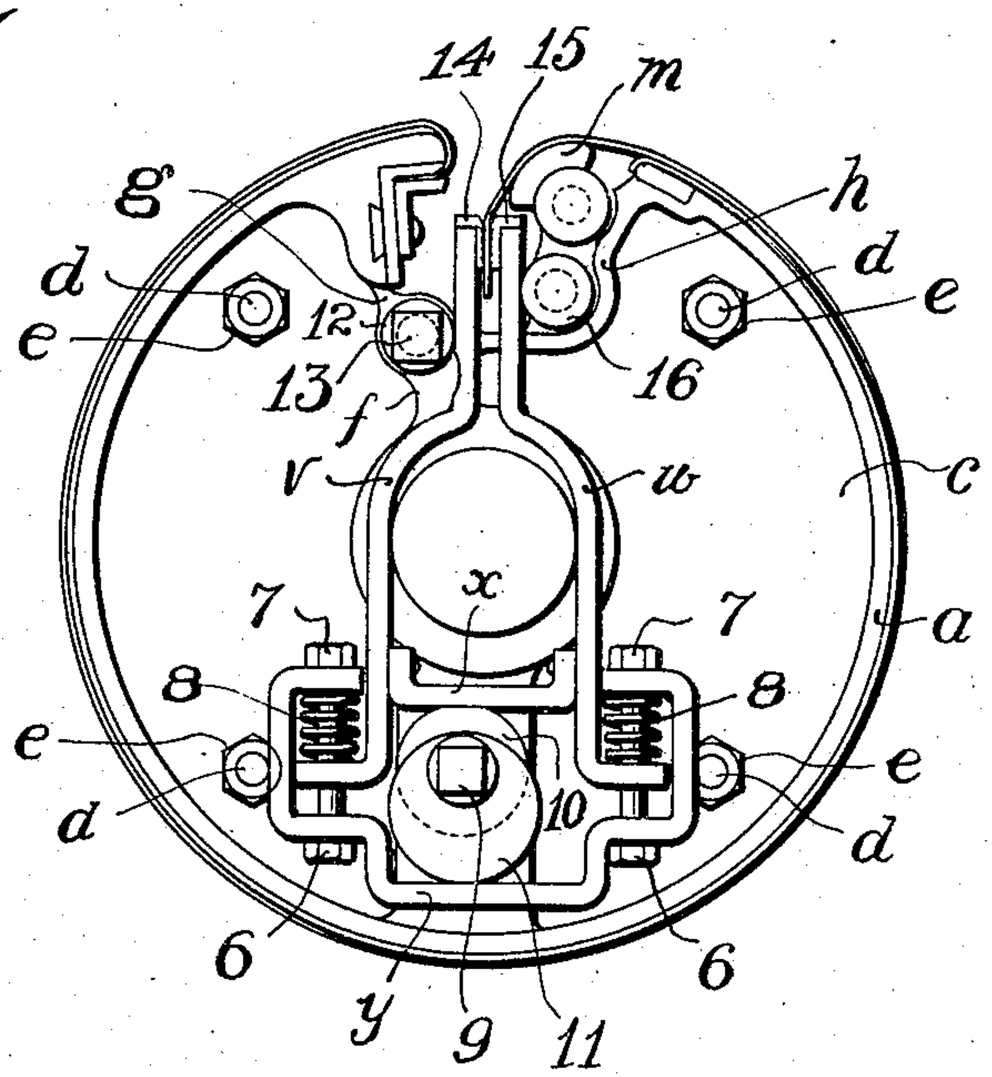


Fig. 7



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No. 785,117. Patented March 21, 1905.

UNITED STATES PATENT OFFICE.

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DRUM FOR SANDPAPERING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 785,117, dated March 21, 1905.

Application filed June 3, 1904. Serial No. 210,969.

To all whom it may concern:

Be it known that I, JAMES L. PERRY, a citizen of the United States, residing at Smithville, county of Burlington, and State of New Jersey, have invented a new and useful Improvement in Drums for Sandpapering-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object to provide an improved construction of drum for sandpapering-machines, and particularly an improved construction of paper-fastening therefor.

Figure 1 is an end view of the drum, showing the position of the parts when in their inoperative position. Fig. 2 is an end view of the drum, showing the position of the parts when the sandpaper is stretched around the drum. Fig. 3 is a longitudinal section through the drum looking toward the left on the line 3 4 of Fig. 1. Fig. 4 is a longitudinal section through the upper half of the drum looking toward the right on the line 3 4 of Fig. 1. Fig. 5 is a detail view of the fastening member attached to the drum. Fig. 6 is an end view similar to Fig. 1, showing a modification. Fig. 7 is an end view, similar to Fig. 2, showing such modification.

The drum is composed, preferably, of a plurality of sections, each consisting of a shell *a*, a hub *b*, and a web *c*, connecting the hub and shell. The sections are held together by means of rods *d* extending through the webs and having at each end the nut *e*. A connecting-piece *f* and a frame *g h* also connect the hub and shell. The shells *a* are cut away at the top throughout their length to permit the ends of the sandpaper to be inserted therethrough and secured in place, as hereinafter described.

Secured to each frame *g*, adjacent to one side of the cut-away portion of the shell, is the angle-iron *i*. *j* is an angle-iron secured to angle-iron *i* by means of bolts *k* extending through slots *l* in angle-iron *j*. These angle-irons each extend throughout the length of the drum. They constitute the fixed fastener for one end of the sandpaper. To attach the sandpaper thereto, one end of the sandpaper is inserted between the transversely-extending clamping members of the two angle-irons and the angle-iron *j* is moved longitudinally of the drum, which, by means of the bolt-and-slot connection described, causes the clamping member of angle-iron *j* to approach the clamping member of angle-iron *i* and securely bind such end of the sandpaper between them.

Extending throughout the length of the drum and adjacent to the other side of the cut-away portion of the shell is a pivoted paper-guide *m*. This member is provided with a longitudinally-extending groove *n* in its outer face, which constitutes one member of the movable fastener. On its inner face the guide is provided with bosses *o*, having pins *p*, which project into orifices in lugs *q* on the frames *h*. This enables the guide *m* to turn on its axis while otherwise maintaining it in a fixed position adjacent to the cut-away portion of the shell. The other member of the movable fastener consists of a longitudinally-extending bar *u*, carried on the upper ends of the stretchers.

The stretcher (of which there may be as many as there are drum-sections) is constructed as follows: Two plates *v* and *w* extend downwardly through each drum-section, their upper ends lying flat against each other and secured together for a short distance, thence diverging so as to embrace the shaft (shown in Figs. 1 and 2) on which the drum is supported and at their lower ends bent transversely outwardly in opposite directions. *x* is a cross-bar joining the lower portions of plates *v* and *w*. *y* is a plate whose central portion extends crosswise of the lower portion of the drum and which from each end of its central portion is bent successively upwardly, thence transversely outwardly beneath the transversely-extending ends of plates *v* and *w*, respectively, thence upwardly, and thence transversely inwardly above the transversely-extending ends of plates *v* and *w*. Bolts 6 6 extend, respectively, through the end of plate *v*

and the adjacent overlying and underlying transverse bends of plate *y* and through the end of plate *w* and the adjacent overlying and underlying transverse bends of plate *y*. 7 represents nuts on the ends of each bolt. 8 8 are springs coiled around bolts 6 6 and confined, respectively, between the ends of plates *v* and *y* and the ends of plates *w* and *y*. As shown in Fig. 1, these springs normally hold the ends of plates *v* and *w* against the respective outwardly-extending transverse bends of plate *y*. Extending longitudinally through the lower part of the drum and having its bearings in the connecting-pieces *f* is a shaft 9, having secured thereto collars 10, to which are secured cams or eccentrics 11, there being as many cams as there are stretchers. When the shaft is turned so that the greater diameter of the eccentric is above the shaft, as shown in Fig. 1, it engages the cross-bar *x*, moving up bodily the plates *v* and *w* and also, through the springs 8 8, the plate *y*—that is, the stretcher is moved up bodily as a whole into position to permit the insertion of the end of the sandpaper between the clamping-bar *n* and the grooved paper-guide *m*. To stretch the paper on the drum, the shaft 9 is given a half-turn, causing the eccentric 11 to engage the central section of plate *y*, thereby moving the latter down to its lowermost position, as shown in Fig. 2. This causes the overhanging ends of plate *y* to act upon the springs, which in turn act upon the ends of plates *v* and *w*, thereby depressing these plates, causing the bar *u* to enter the groove *n* in guide *m* and turning the latter on its pivot, thereby successively and by one operation clamping the sandpaper tightly between the members of the movable fastener and drawing down that end of the sandpaper. The tension exerted on the sandpaper depends on the strength of springs 8 8. When in the movement of the eccentric the paper is stretched with sufficient tightness on the drum, the paper, resisting further stretching, acts on plates *v* and *w* to compress the springs 8 8. After the paper is thus secured at both ends and stretched on the drum any subsequent shrinkage of the sandpaper will compress the springs, while any expansion of the sandpaper will cause the springs to expand and take up such expansion. It will thus be seen that under all circumstances the sandpaper will be stretched on the drum with the desired degree of tightness and any subsequent tendency to overstretching or looseness is automatically avoided.

To prevent any movement of the member *u* of the movable fastener toward the fixed fastener, which would prevent the sandpaper being effectively clamped between the two members of the fastening device, I provide a roller 12 on a shaft 13, extending through each frame *g h*. These rollers at all times bear against the plates *v*.

On the plate *w* I provide a lug *z* in such position that as the stretcher is moved upwardly to release the sandpaper the lug will engage the member *m* and turn it on its axis to restore it to the position shown in Fig. 1, permitting the sandpaper to be readily removed.

In Figs. 6 and 7 I have shown a modified construction for simultaneously clamping and stretching the sandpaper. In this modification the pivoted paper-guide *m* is made with a smooth working face, the groove *n* being omitted. The plates *v* and *w* are spaced apart, and gripping-jaws 14 15 are secured to their upper ends, the jaw 15 when the stretcher is in its inoperative position resting just below the guide *m*. In the outer face of plate *v* a depression is provided, in which the roller 13 rests when the stretcher is in its upper or inoperative position, permitting the plate *v* to be moved away from plate *w* sufficiently to permit the ready insertion of the sandpaper between the gripping-jaws. When the stretcher is moved down, the roller will ride out of the depression, forcing the plate *v* into close contact with plate *w*, and thus by a single operation of the eccentric 11 clamping the sandpaper and stretching it on the drum. When the stretcher is moved up, the jaw 15 moves the guide *m* into the position shown in Fig. 6 and the roller 13 rides into the depression, separating, or permitting the separation of, plates *v* and *w* to allow the end of the sandpaper to be removed. To prevent the plate *w* from moving away from plate *v* in the downward movement of the stretcher, a roller 16 is pivoted to the frame *h*, against which the plate *w* at all times rests.

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

1. A paper-fastening for sanding-drums, consisting of a fixed fastener for one end of the sandpaper, a movable fastener for the other end of the sandpaper, a stretcher in operative relation with said movable fastener, means to compress the spring and thereby actuate the stretcher to stretch the paper on the drum, and means enabling the stretcher to be positively moved toward its inoperative position.

2. A paper-fastening for sanding-drums consisting of a stretcher, a spring, means to compress the spring and thereby actuate said stretcher to stretch the paper on the drum, and means enabling the stretcher to be positively moved toward its inoperative position.

3. A paper-fastening for sanding-drums consisting of a stretcher, a spring, a cam, means enabling the cam to actuate the spring and thereby actuate said stretcher to stretch the paper on the drum, and means enabling said cam to positively actuate the stretcher in the opposite direction, and means to turn the cam.

4. A paper-fastening for sanding-drums, consisting of a movable fastener for one end

of the sandpaper, a stretcher in operative relation with said movable fastener, and adapted when actuated to operate said fastener to clamp said paper, and means to actuate the stretcher, thereby, by a single operation of the stretcher-actuating means, both clamping the paper and stretching it on the drum.

5. A paper-fastening for sanding-drums consisting of a stretcher, a fastener consisting of two clamping members, one at least of which is carried by said stretcher and is adapted to clamp one end of the said paper against the other member in the operation of the stretcher, and means to actuate the stretcher, thereby clamping the paper in the movement of the stretcher to stretch it on the drum.

6. A paper-fastening for sanding-drums consisting of a fixed fastener for one end of the sandpaper, a movable fastener for the other end of the sandpaper, a stretcher adapted when operated to actuate said movable fastener to clamp the paper and also to stretch the paper on the drum, and means to actuate the stretcher.

7. A paper-fastening for sanding-drums consisting of a fixed fastener within the drum for one end of the sandpaper, a movable fastener within the drum for the other end of the paper, a stretcher and means to move said stretcher in substantially a radial direction within the drum, said stretcher being so connected with said movable fastener that in its movement to stretch, it also actuates said movable fastener to clamp the paper.

8. A paper-fastening for sanding-drums consisting of a stretcher composed of two parts and a spring interposed between said parts, one of said parts being adapted, when moved away from its inoperative position, to stretch the paper on the drum, and means to actuate the other part of said fastener, thereby through said spring actuating the first-named part and stretching the paper on the drum.

9. A paper-fastening for sanding-drums consisting of a stretcher composed of two parts and a spring interposed between said parts, one of said parts being adapted, when moved away from its inoperative position, to stretch the paper on the drum, and means adapted to actuate the other part of said fastener to move the stretcher to stretch the paper on the drum and adapted to actuate the first-named part to return the stretcher to its inoperative position.

10. A paper-fastening for sanding-drums consisting of a stretcher within the drum composed of two parts and a spring interposed between the parts, one of said parts being adapted, when moved away from its inoperative position, to stretch the paper on the drum, and a cam adapted to engage the other part of said fastener and thereby, through said spring, actuate the first-named part to stretch the paper on the drum.

11. A paper-fastening for sanding-drums consisting of a stretcher within the shell composed of two parts and a spring interposed between the parts, a fastener for the paper in operative relation with one of said parts, and a cam between said parts adapted when turned in one direction to engage the part remote from the fastener and thereby through the spring actuate the part connected with the fastener to stretch the paper on the drum and adapted when turned in the other direction to engage the last-named part and return it to its normal position.

12. A paper-fastening for sanding-drums consisting of a movable fastener, the plates v and w, connected with the fastener, a cross-bar x connecting said plates, a plate y, a spring interposed between plates v and y, a spring interposed between plates w and y, a shaft, a cam on said shaft adapted to engage said cross-bar to hold plates v and w in their inoperative position, said cam being adapted when turned to engage plate y and thereby through said springs actuating plates v and w and the movable fastener to stretch the paper on the drum.

13. A paper-fastener for sanding-drums consisting of upper plates v and w whose upper ends extend substantially parallel to each other and whose lower ends are bent outwardly downwardly and thence outwardly in opposite directions respectively, a cross-bar connecting the downward bends of said plates, a lower plate y whose opposite ends extend successively transversely outwardly, upwardly, and transversely inwardly whereby the transverse bends of the ends of plate y respectively underlie and overlie the ends of plates v and w, a bolt extending through the transverse bends of one end of plate y and the end of plate v, a bolt extending through the transverse bends of the other end of plate y and the end of plate w, a coiled spring around each bolt, said springs being confined respectively between the ends of plates v and w and the opposite inward bends of plate y, a shaft, and a cam on said shaft adapted to alternately engage and move the central portion of plate y and the cross-bar x.

14. A sanding-drum having a longitudinal opening, a stretcher within the drum, means to actuate the stretcher, a guide, adjacent to said longitudinal opening, over which the paper extends, said guide being adapted to turn on its axis in the operation of the stretcher, and fastening means for the paper.

15. A sanding-drum having a longitudinal opening, a stretcher within the drum, a guide, adjacent to said longitudinal opening, over which the paper extends, a fastener for the paper one member at least of which is carried by said stretcher, and which, in the movement of the stretcher, is adapted to be actuated to clamp the paper, and means to actuate the stretcher, thereby, by a single operation, successively clamping the paper and stretching it on the drum.

16. A sanding-drum having a longitudinal

opening, a stretcher within the drum, a guide adjacent to said opening, adapted to turn on its axis, a movable fastener the members of which are respectively carried by said stretcher and guide, the end of the paper being adapted to be inserted between said members, and means to actuate said stretcher, whereby, as the paper is stretched on the drum, said guide will turn on its axis.

17. A sanding-drum having a longitudinal opening, a movable paper-guide adjacent to said opening, a stretcher within the drum, a longitudinally-extending fastening member on the stretcher, said guide having a longitudinal groove forming the other member of the fastener, and means to actuate the stretcher, thereby moving both fastening members and the guide and stretching the paper on the drum.

18. A sanding-drum having a longitudinal opening, a pivoted paper-guide adjacent to said opening, said guide having a longitudinal groove forming one member of the paper-fastener, a stretcher, a longitudinal bar carried by said stretcher and forming the other member of the fastener, said bar normally extending above said groove, and means to move said stretcher away from said longitudinal opening, thereby clamping the paper between the members of the fastener, and turning said guide on its pivot, and stretching the paper on the drum.

In testimony of which invention I have hereunto set my hand, at Philadelphia, on this 19th day of May, 1904.

JAMES L. PERRY.

Witnesses:
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M. M. HAMILTON.