

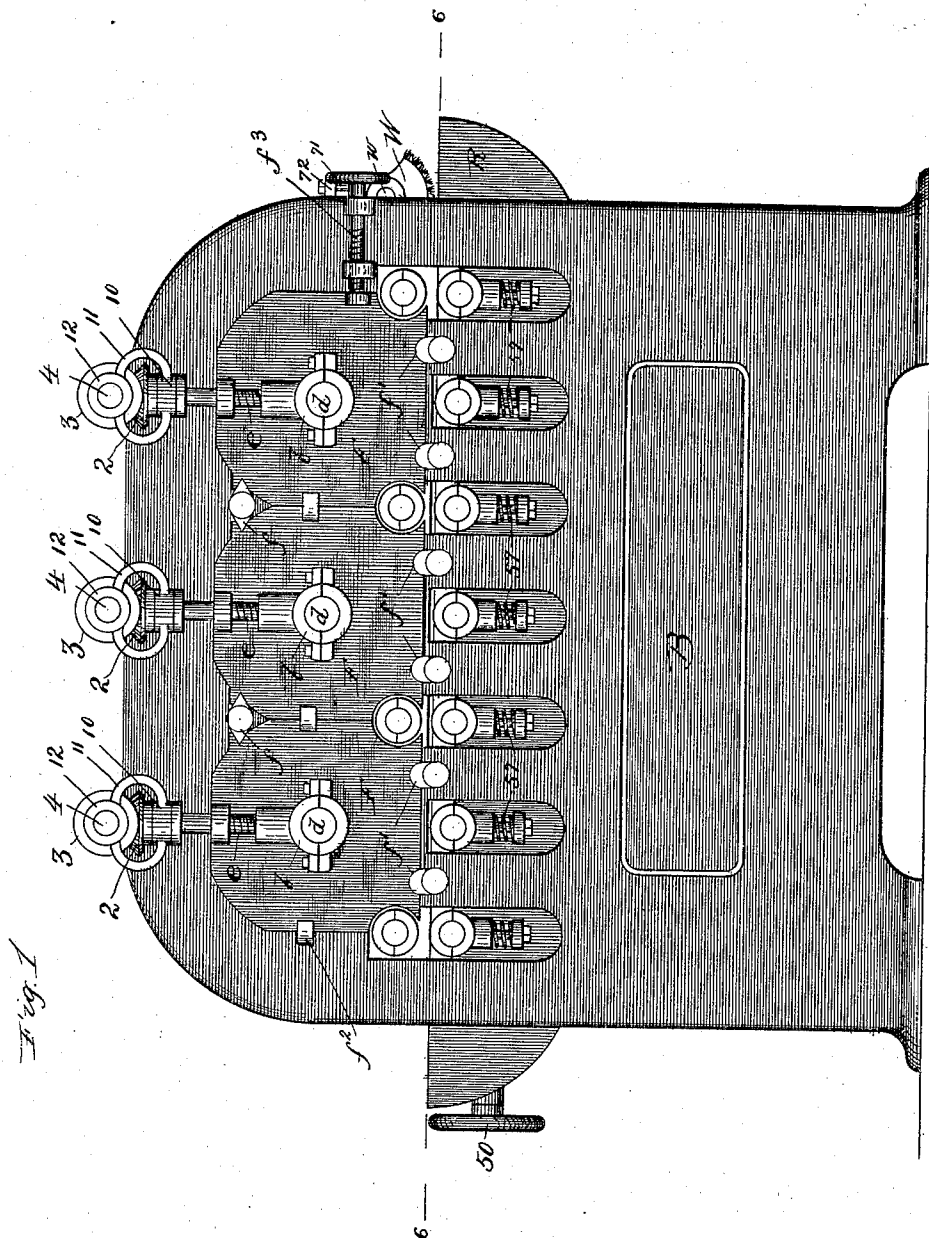
(No Model.)

6 Sheets—Sheet 1.

J. L. PERRY.
SANDPAPERING MACHINE.

No. 474,686.

Patented May 10, 1892.



Witnesses:

Sam. C. Curtis
Emma Stack

Inventor:

James L. Perry

By Munday Evans & Adcock
His Attorneys

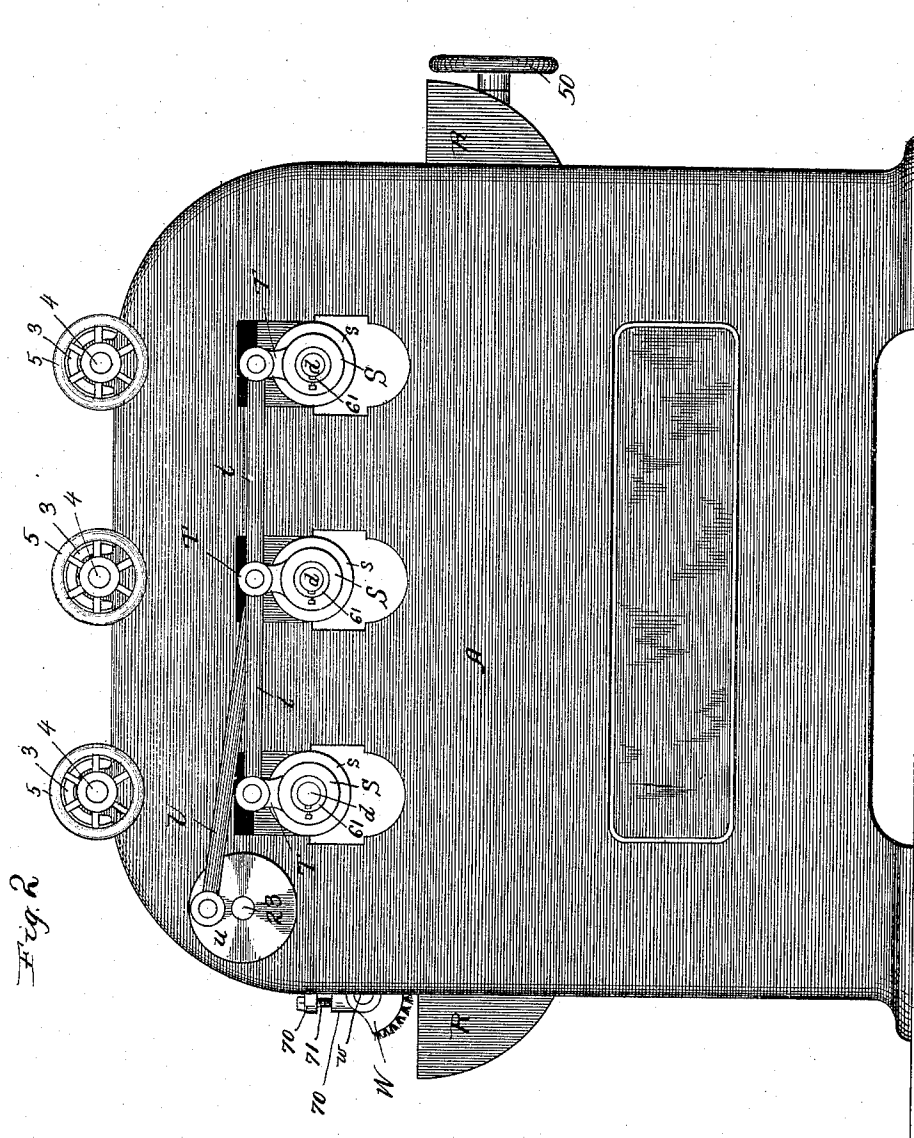
(No Model.)

6 Sheets—Sheet 2.

J. L. PERRY.
SANDPAPERING MACHINE.

No. 474,686.

Patented May 10, 1892.



Witnesses:

Sew. C. Curtis
Emma Stack

Inventor:

James L. Perry

By Munday Evans & Adcock

Fris Attorneys.

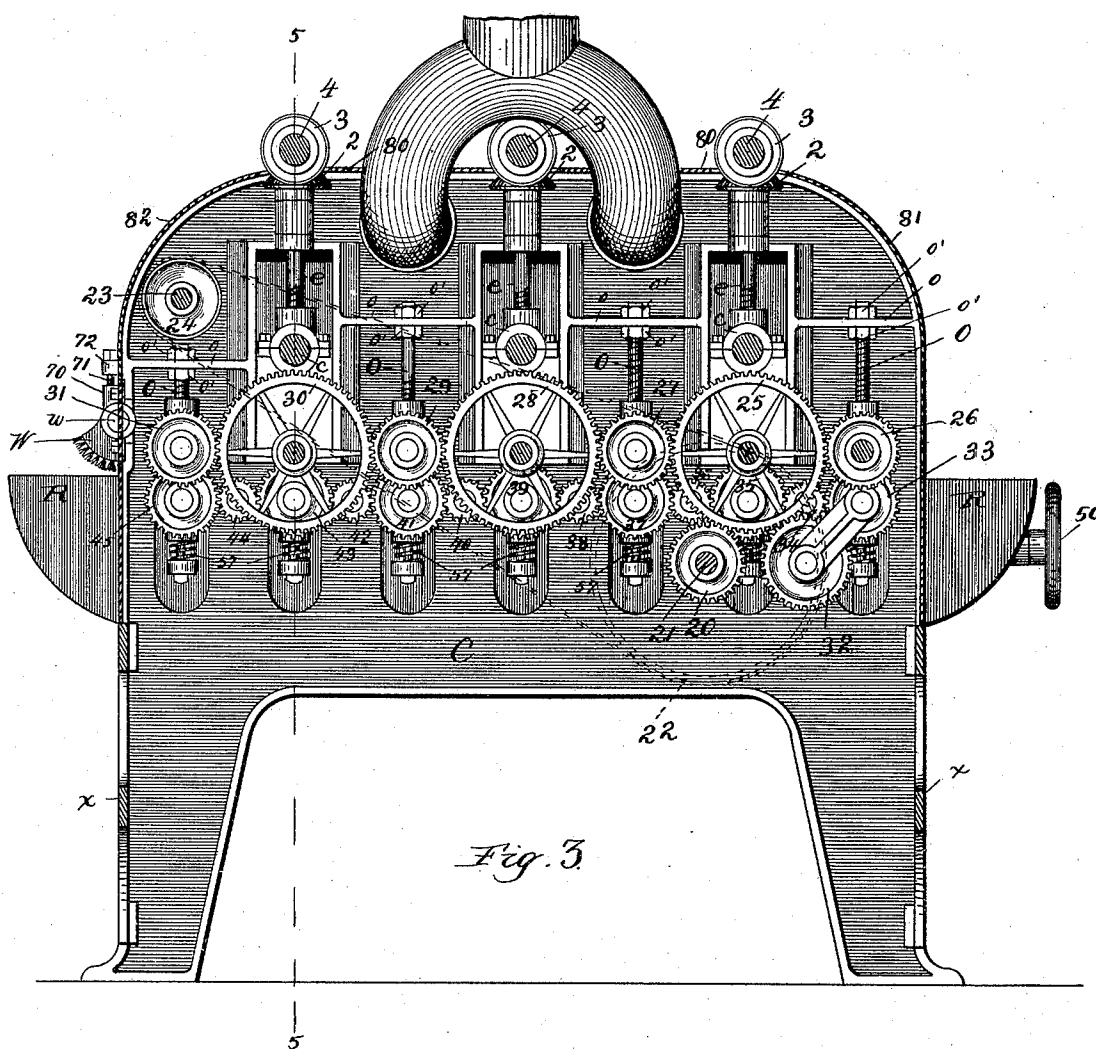
(No Model.)

6 Sheets—Sheet 3.

J. L. PERRY.
SANDPAPERING MACHINE.

No. 474,686.

Patented May 10, 1892.



Witnesses:
Saw. C. Curtis
Emma Stark

Inventor:
James L. Perry
By Munday Evans & Adcock
His Attorneys.

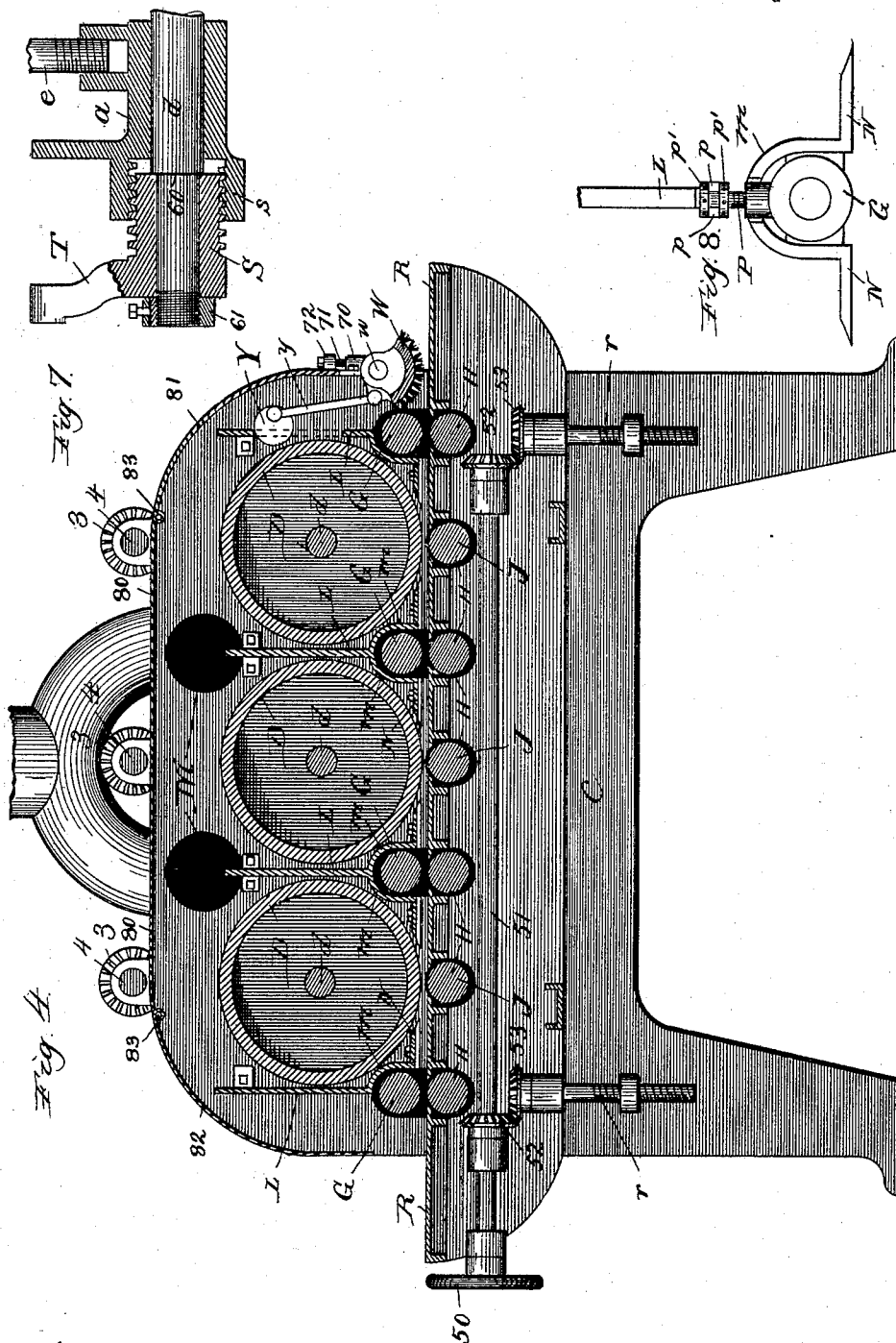
(No Model.)

6 Sheets—Sheet 4.

J. L. PERRY.
SANDPAPERING MACHINE.

No. 474,686.

Patented May 10, 1892.



Witnesses:
Geo. C. Curtis
Emma Stack

Inventor:
James I. Perry
By Munday Evans & Adcock
His Attorneys.

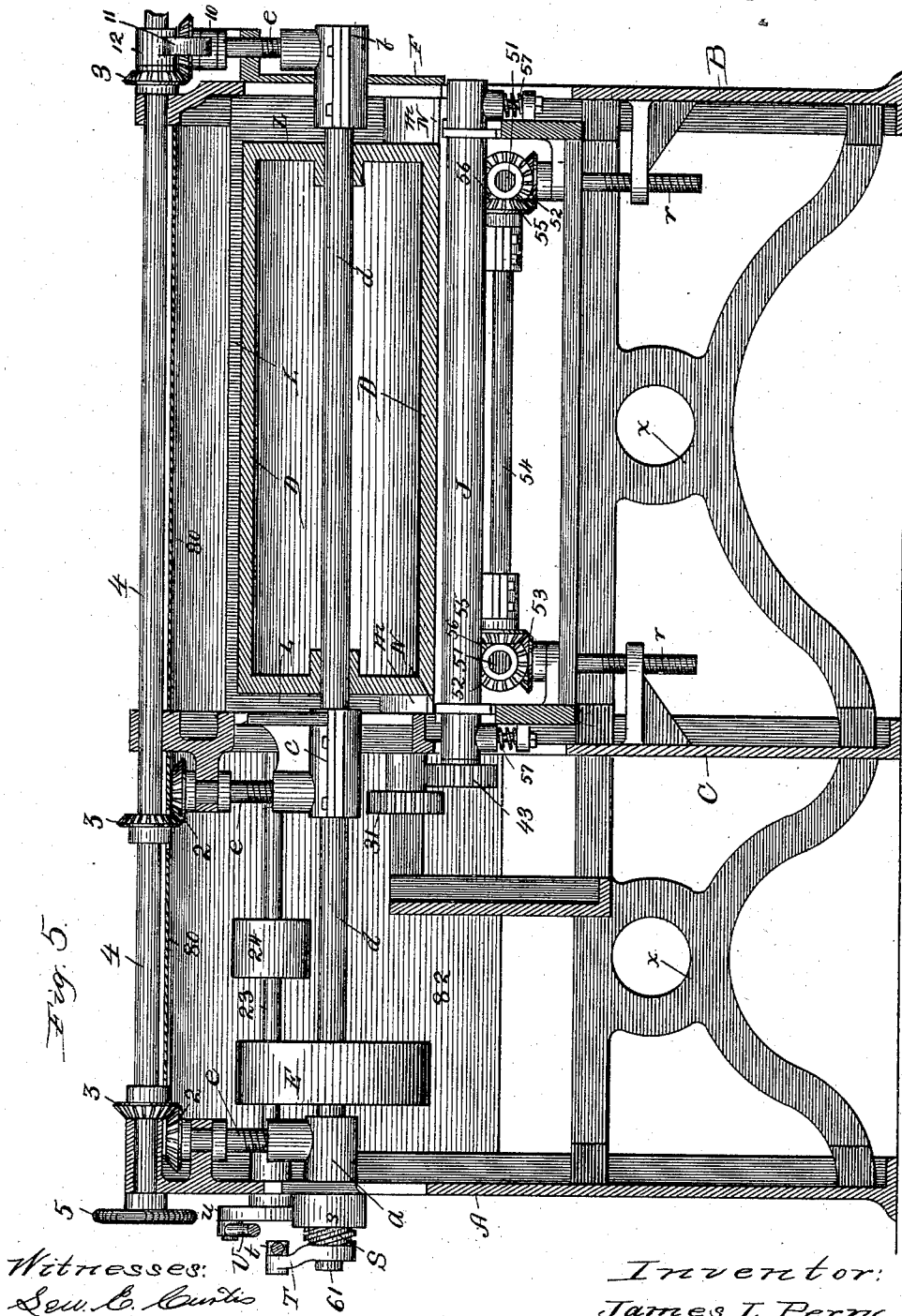
(No Model.)

6 Sheets—Sheet 5.

J. L. PERRY.
SANDPAPERING MACHINE.

No. 474,686.

Patented May 10, 1892.



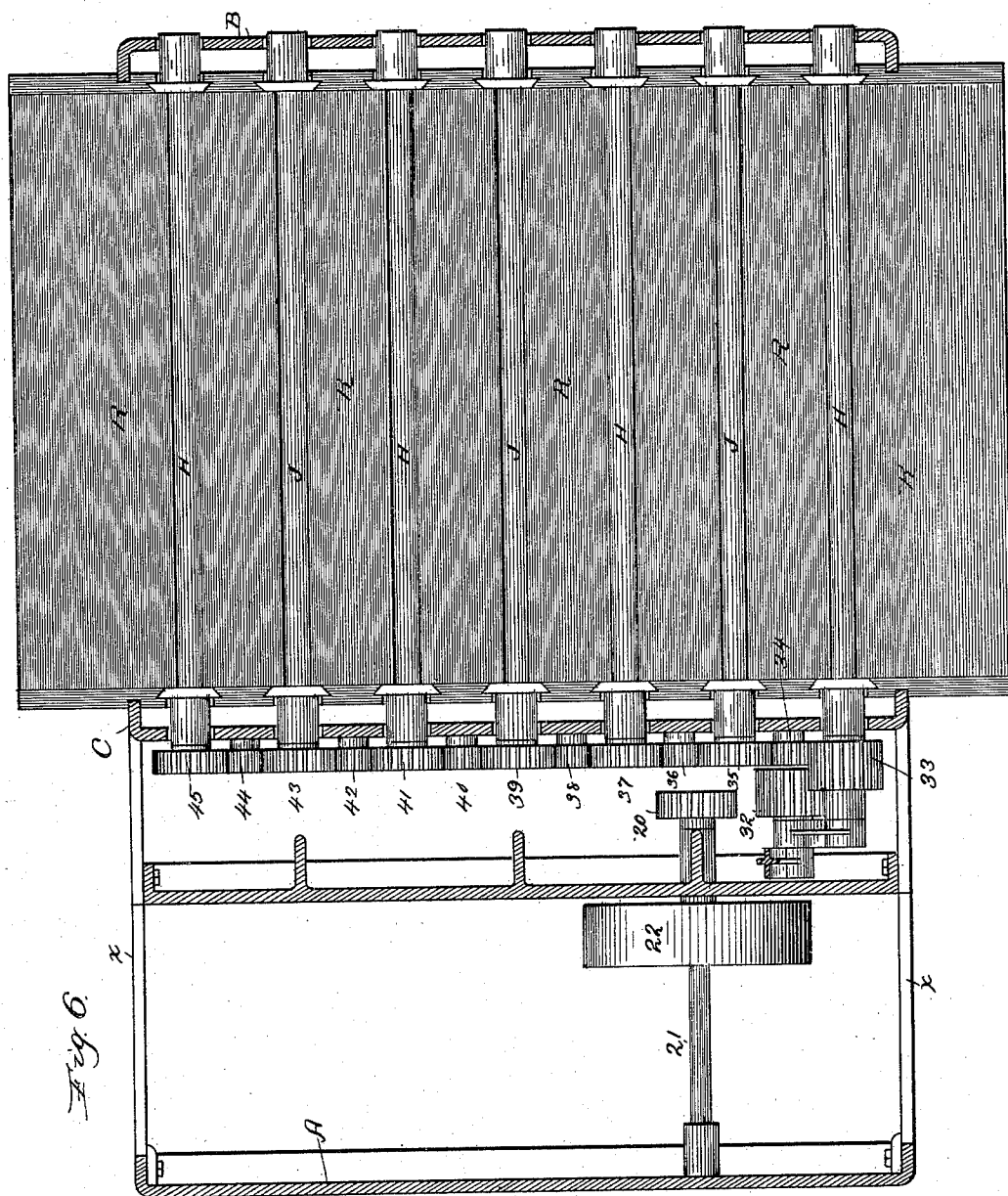
(No Model.)

6 Sheets—Sheet 6.

J. L. PERRY.
SANDPAPERING MACHINE.

No. 474,686.

Patented May 10, 1892.



Witnesses:
Saw. C. Lewis
Emma Stark

Inventor:
James L. Perry
By Munday Evans & Adcock
His Attorneys.

UNITED STATES PATENT OFFICE.

JAMES L. PERRY, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE J. L. PERRY MACHINE COMPANY, OF SAME PLACE.

SANDPAPERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 474,686, dated May 10, 1892.

Application filed March 20, 1891. Serial No. 385,735. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. PERRY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Sandpapering-Machines, of which the following is a specification.

This invention relates to certain improvements in sandpapering-machines. As heretofore constructed, the driving-pulleys of the sand-paper cylinders of this kind of machines have been located on the end of the journals of the cylinders and outside of the bearings in which they are supported, so that the belts exert constantly a strain in one direction upon such journals tending to twist them and to throw them out of their proper line or position.

One object of my invention has been to overcome this strain by the belts and prevent the journals from getting out of line under such strain.

Another object I have had is the construction of the machine in such manner as to permit the inclosing or covering up of all the driving belts and gears, so that the workmen's safety is not imperilled, as in the old machines.

A third object has been the obtaining ready access to the ends of the cylinders to renew the sand-paper coverings, and this access is preferably made so full and free as to permit the slipping endwise upon the cylinders of coverings in tubular form, having their edges already joined together.

A fourth object has been to provide means whereby thin stuff may be held down in a flat condition during its entire course through the machine instead of being held solely by the rolls and polishing-cylinders and allowed to wrinkle or curl up while passing through the spaces intervening between the various pairs of rolls or cylinders.

The nature of the means adapted for the accomplishment of these objects, together with the details of the construction of my improvement are fully set forth in the specification following, and illustrated in the accompanying drawings, forming part of said specification, and to them reference is hereby made.

The drawings show at Figures 1 and 2 ele-

vations of opposite sides of my improved machine. Figs. 3 and 4 are longitudinal vertical sections. Fig. 5 is a transverse vertical section on the line 5 5 of Fig. 3. Fig. 6 is a horizontal section on the line 6 6 of Fig. 1. Fig. 7 is an enlarged sectional view of the device used to impart the endwise vibration to the polishing-cylinder and its attachment to the cylinder. Fig. 8 is an enlarged end elevation of one of the partitions supporting the upper feed-rolls and forming the upper table of the machine.

In the drawings, A, B, and C represent castings forming the uprights which support the machine and are connected together at front and rear by bracing-frames *x x*.

D D are the sand-paper cylinders mounted upon journals *d*. The journals are longer than is customary, and are given an extra or third bearing *a* at the end bearing the driving-pulleys E and outside the latter, each journal *d* having thus a bearing at each end of the uprights A, B, and C, as indicated at *a*, *b*, and *c*. By reason of their extra bearings *a* and their location beyond the pulleys, the belt strain upon the latter is effectually overcome, and can have no effect in drawing or twisting the journals out of their proper alignment or in producing the unequal wear of the bearings which has heretofore been the case. By the provision of this extra bearing I am enabled to extend the journals sufficiently to permit the putting of the pulleys of all the cylinders at the same side of the machine and also the driving them from a single short countershaft without causing interference with each other or their belts. In the case of each cylinder the bearings *a*, *b*, and *c* are simultaneously and uniformly adjusted vertically by means of vertical screws *e*, entering threaded recesses in the bearings, bevel-pinions 2 upon such screws, other like pinions 3, intermeshing with pinions 2 and mounted upon a shaft 4, extending across the machine and operated by a hand-wheel 5.

The end of the sand-paper cylinders is rendered readily accessible by means of removable doors F, supported upon the end piece B. These doors I prefer to make independent of each other and to place one opposite each cylinder, thereby permitting admission to any

one of the series without regard to the others. The doors are held in position by means of buttons f , placed in the angle between the doors at the top and buttons f' , located at their bottoms. The doors may also be clamped edgewise between the stop f^2 and the set-screw f^3 . To obtain complete access to the ends of the cylinders, so as to permit the placing on the cylinders of sand-paper tubes or covers by a longitudinal movement of the cover over and along the cylinders, the bearings b at this end of the cylinders are also made removable, and they may also be and preferably are attached to the doors F , so as to be sustained thereby against the end thrust of the cylinder-journals and also against lateral movement, the doors being free to move with the bearings in the vertical adjustments of the latter, and being guided in such movements by their contact with each other and by stop f^2 and set-screw f^3 . To permit this removability of bearings b , the following construction may be adopted with each of them. The adjusting-screw e of these bearings is sustained in a box 10, supported by arms 11 from a collar 12, slidingly mounted upon the shaft 4. The latter shaft is extended sufficiently to sustain the collar 12, when the latter is moved outwardly to allow the bearing b to be slipped off the cylinder-journal d , which operation may be performed after releasing the clamping-screw and buttons holding the door. When the bearing is free from the journal, the door may be swung to one side upon its said supporting-shaft 4.

When the bearings b are removed from the cylinder-journals, as above set forth, the cylinders are well supported by the other bearings a and c , as will be understood.

Between the several sand-paper cylinders and also in front and in the rear of the first and last ones are placed feed-rolls G , and each of such rolls is preferably countered by under feed-rolls H , as shown. I also preferably place under each of the cylinders a pressure-roll J , as shown. All these rolls G , H , and J are driven at a uniform surface speed by trains of gears, all receiving motion from the gear 20, mounted on shaft 21, and actuated by means of pulley 22 and a belt from shaft 23 and pulley 24, or from some other source. The gear 20 meshes with the large gear 25 and through the same drives the train 26, 27, 28, 29, 30, and 31, gears 26, 27, 29, and 31 each actuating one of the rolls G . Gear 25 also meshes with a gear 32, and the latter drives the train 33 34 35 36, &c., of which alternate ones actuate the rolls H and J . The upper rolls G are placed below transverse vertical partitions L , located at either side of the several cylinders D , and serving to form chambers, so to speak, for each cylinder, wherein they are separated from each other and prevented from throwing the dust and chips which they may dislodge from the surface being polished upon or against each other. The suction-conduit M opens from the upper por-

tion of the inclosing case of the machine above these cylinder-spaces and draws the dust directly therefrom. In this way the cylinders are prevented from interference with each other as might be the case if the particles of matter severed by one cylinder were permitted to fly or be thrown over or find lodgment upon the surface of the next succeeding cylinder, or where they will be drawn into the field of action of the latter cylinder. The partitions L are also provided with arched shields m , which set down over the feed-rolls G , as clearly illustrated at Fig. 8, and shelter the latter from the dust. Feet N extend laterally from the shields m into close proximity to the sand-paper-cylinders, as shown. They extend from end to end of the cylinders, also, and serve as an upper table to the machine, acting upon any thin stuff being polished to keep it flat and prevent its springing up or curling while in transit between the various pairs of rolls or cylinders.

The bearings of rolls G at one end are adjustable by means of screws O , passing through the horizontal bars o of the upright C , and at the other end by the screws P , sustained in the partitions. The screws O are operated by the nuts o' , while screws P are confined against sliding in the projections p , formed upon the partitions by the collars p' , rigidly secured on the screws, and are operated by means of spanner-openings in said collars.

R is the table of the machine, over which the stuff to be polished is passed. It is supported from uprights B and C by screws r at either corner, and said screws are simultaneously operated when the table is to be vertically adjusted by means of the hand-wheel 50, shafts 51, gears 52 and 53, cross-shaft 54, and gears 55 and 56. This table carries all the bearings of the rolls H and J , and I prefer to make such bearings slightly yielding, so the rolls may accommodate themselves to slight differences in thickness between different pieces of the material being operated upon. This yielding is obtained by supporting the bearings upon springs 57.

The endwise movement of the polishing-cylinder is obtained in the following manner: Upon the turned-down ends of the journals d and between shoulders 60 and collar 61, threaded on the extreme ends of the journals, are sleeves S . These sleeves are threaded exteriorly and in engagement with the female threaded sockets s , attached to the cylinder-bearings a , the pitch of the threads being steep. From each sleeve extends a crank-arm T , and the series of crank-arms are joined together by a bar t , as seen at Fig. 2. A pitman U , connected to one of the cranks T and actuated by the crank u upon the drive-shaft 23, serves to oscillate the crank-arms T , and thus to cause the sleeves to rock in sockets s , and impart the desired longitudinal movement to the cylinders. This movement is thus caused by devices applying the power directly at the axis of the cyl-

inders and at all sides thereof alike, thus avoiding any tendency to twist or bind upon the cylinder-journals, or to cause the journals to bind in their bearings.

5 In this class of machines it has been customary to employ a brush in connection with the sandpapering-cylinders to remove the dust and any loosened fibers which may adhere to the surface acted upon. These
10 brushes have usually been either stationary or rotating. In either case they act in only one direction upon the polished surface and tend to cause any loosened fibers which may be adhering thereto to lay down upon the surface instead of removing them, and for this
15 reason they have failed to be as effective as is desirable. In my present machine I give the brush a movement forward and backward, so that this tendency to make the fibers
20 lie down is overcome, the movement in one direction tending to loosen or lift the fibers and the movement in the other direction tending to sever or remove them. This movement may be a reciprocating one or an oscillating one. In the construction shown I have
25 mounted the brush *W* upon a shaft *w*, and connected it by means of a pitman *y* with a crank-disk *Y* upon the shaft 23. The bearings 70 of shaft *w* are supported from screws
30 71, passing through projecting studs 72, attached to the standards *B* and *C*, this construction allowing the bearings to be adjusted as the brush becomes worn or for any other reason.

35 The operating parts of the machine, together with the driving-gears of the feed mechanism and the belts for actuating the polishing-cylinders, are all inclosed in my machine by a covering of metal composed of
40 the top portion 80 and front and rear portions 81 and 82. Said front and rear portions 81 and 82 are hinged to the part 80, as shown at 83, so that they may be raised when access is desired to the moving parts of the machine.
45 This covering rests upon and is supported by the uprights, as shown, and it may be extended below the level of the table at that part of the machine inclosing the gearing and driving-belts, as will be noticed in the
50 drawings. By thus covering the driving-belts and gearing the safety of the workman against accident is conserved.

It will be noticed that all the drive-pulleys for actuating the cylinders are located at the
55 same end of the cylinders and between the uprights *A* and *C*. This leaves the other side of the machine unobstructed by pulleys and belts, and I am enabled therefore to put in the sand-paper from the unobstructed side
60 with much greater ease than has been possible heretofore in this class of sanders. The added upright or frame *A* further serves to inclose all the moving parts of the machine except the vibratory devices.

65 By making both the end bearing and that portion of the machine-frame opposite the end of the sand-paper cylinder removable, I

am enabled not only to conveniently and expeditiously replace the sandpaper, but I can also remove the cylinder whenever that is
70 rendered necessary for repairs. I thus obviate the necessity which exists in previous constructions of dismantling the entire machine in order to get at or remove the cylinder.

I claim—

1. In a sandpapering-machine, a sand-paper cylinder having a long journal and three vertically-adjustable bearings, one of said bearings being adapted to be moved with its adjusting device endwise of the cylinder-journal
80 and off the same, substantially as set forth.

2. The combination, with a sand-paper cylinder, of a bearing for the end of said cylinder removable from the cylinder-shaft, and an adjusting device supporting the bearing
85 and made removable with the same, substantially as set forth.

3. In a sandpapering-machine, the combination of the cylinder with the uprights in which it is journaled, one of said uprights
90 being provided with a removable portion adapted when removed to uncover the end of the cylinder, substantially as set forth.

4. In a sandpapering-machine, the combination of the cylinder with the uprights
95 in which it is journaled, one of said uprights being provided with a removable portion adapted when removed to uncover the end of the cylinder, and a removable bearing at the same end of the cylinder, substantially as set
100 forth.

5. In a sandpapering-machine, a cylinder provided with a vertically-adjustable bearing at one end removable at will to allow the sand-paper covering to be slipped endwise
105 over the end of the cylinder, and with a vertically-adjustable support at the other end adapted to maintain the cylinder in position when the removable bearing is taken off, substantially as set forth.

6. The combination, with the cylinders, of removable bearings *b*, adjusting-screws for said bearings, boxes sustaining said screws, arms from said boxes to collars 12, and the extended shafts 4, upon which the collars are
115 mounted, and said collars and shafts, substantially as set forth.

7. In a sandpapering-machine, the combination of a plurality of sandpapering-cylinders having their driving-pulleys at the same
120 side of the machine and all having removable bearings at the other side of the machine, whereby all the cylinders are rendered accessible from the same end, substantially as set forth.

8. The sandpapering-machine provided with an upper and lower table confining the material while in transit from one pair of rolls or cylinders to the next pair, one of said tables being formed by the feet of partitions
130 placed between the cylinders, substantially as set forth.

9. In a sandpapering-machine, the combination, with the cylinders and feed-rolls, of

the feet N, placed between the cylinders and feed-rolls, and the partitions supporting said feet, substantially as set forth.

10. The combination, with sandpapering-
5 cylinders, of the sleeves S, confined on the cylinder-journals and having threaded engagement with stationary sockets, in combination with such sockets and means for rocking the sleeves upon the journals, substantially as specified.
10

11. In combination with the cylinders of the rocking threaded sleeves confined on the cylinder-journals, a stationary female screw with which said sleeves engage, and means for rocking said sleeve, substantially as set forth.
15

12. As a means for giving endwise movement to the cylinders, a rocking screw confined on the cylinder-journals, in combination with a stationary screw with which said rocking screw engages, substantially as set forth.
20

13. The sandpapering-machine, the cylinders whereof are inclosed and are all driven by pulleys located at one side of the machine, the inclosing frame at the other side of the machine being provided with removable portions whereby to uncover the ends of the cylinders, substantially as set forth.
25

14. The combination, in a sandpapering-machine, of a cylinder and its bearings sustained by vertical screws, one of said screws being movably supported so as to permit a
30

sliding movement by the bearing carried by it, substantially as set forth.

15. The combination, in a sandpapering-machine, of a cylinder and its bearings, vertical screws carrying said bearings, supports for said screws, and means for turning the screws to adjust the cylinder, the support for one of the screws being movable to permit the removal of the bearing carried by it from the cylinder, substantially as set forth.
40

16. In a sandpapering-machine, the combination of an adjustable cylinder with a supporting and inclosing frame, such frame having a removable and adjustable portion opposite one end of the cylinder, and the cylinder having its bearing at the same end also removable, substantially as set forth.
45

17. In a sandpapering-machine, the combination of three upright frames and sand-paper cylinders, the journals whereof are provided with adjustable bearings at each of such frames, all the cylinders being located between one of the end frames and the center frame and all their pulleys being located between the center frame and the other end frame, substantially as set forth.
50
55

JAMES L. PERRY.

Witnesses:

H. M. MUNDAY,
EMMA HACK.