

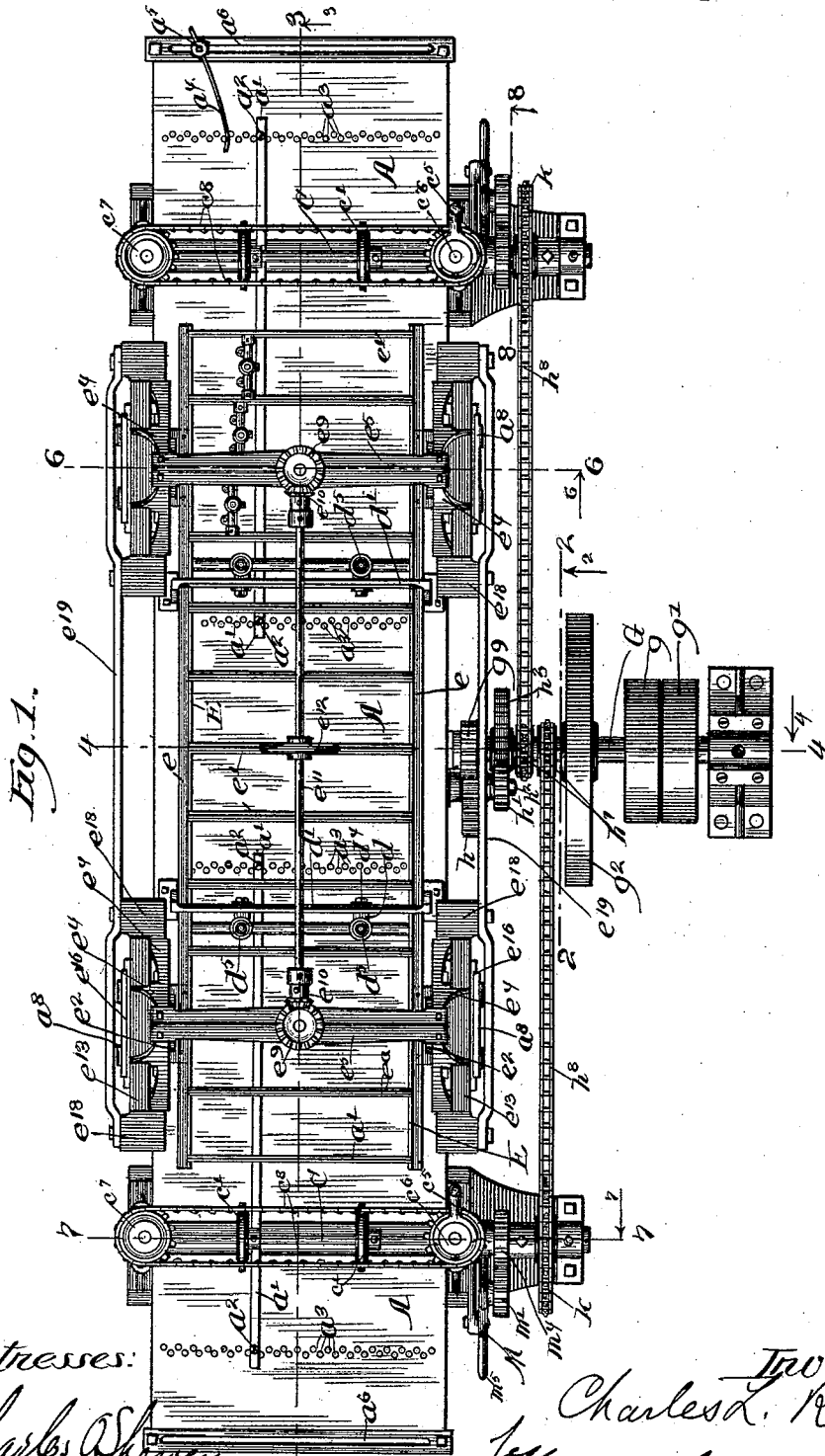
(No Model.)

6 Sheets—Sheet 1.

C. L. RUEHS.
SANDPAPERING MACHINE.

No. 495,104.

Patented Apr. 11, 1893.



Witnesses:

Charles Shrevey
A. J. H. Ebborn

Inventor:
Charles L. Rucko
by Miles Ormerout Rucker,
Attys

(No Model.)

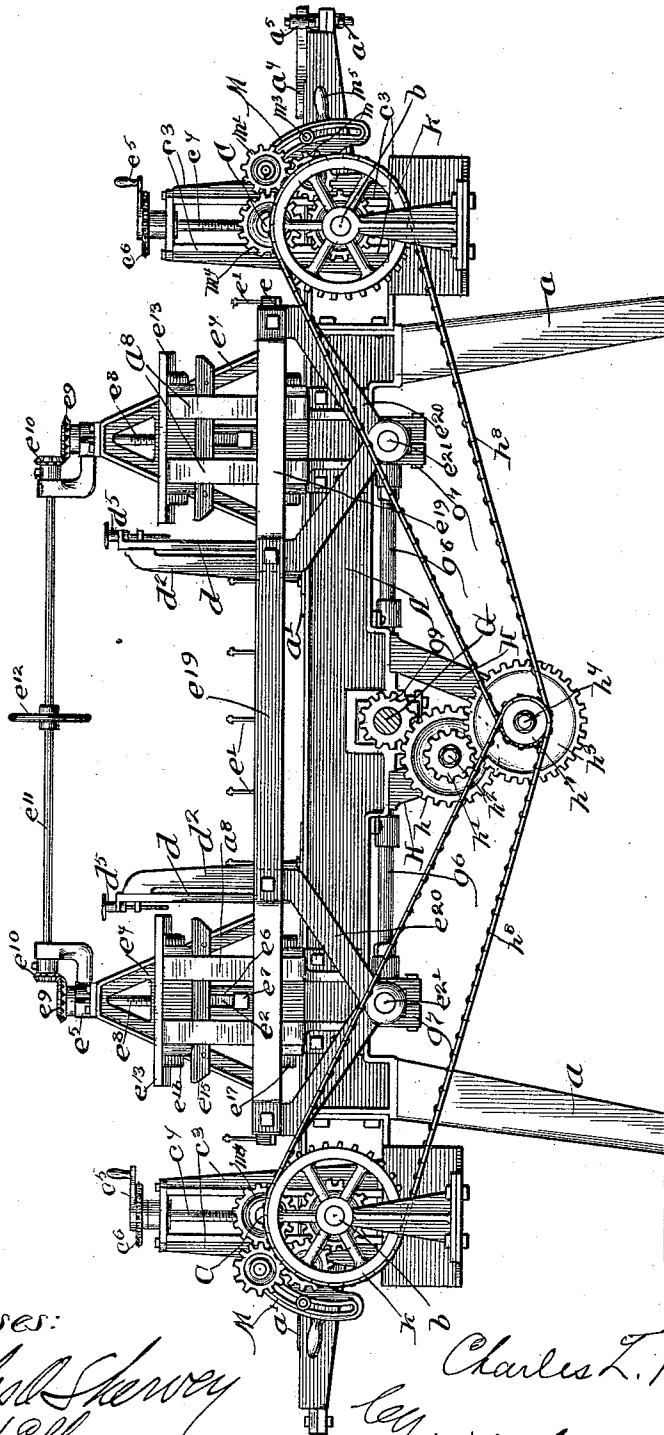
6 Sheets—Sheet 2.

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Patented Apr. 11, 1893.

Fig. 2



Witnesses:

Charles Sherway
A. J. H. Ebbesen

Inventor:

Charles L. Ruehs

Wm. Wm. Bitter
ATTY

(No Model.)

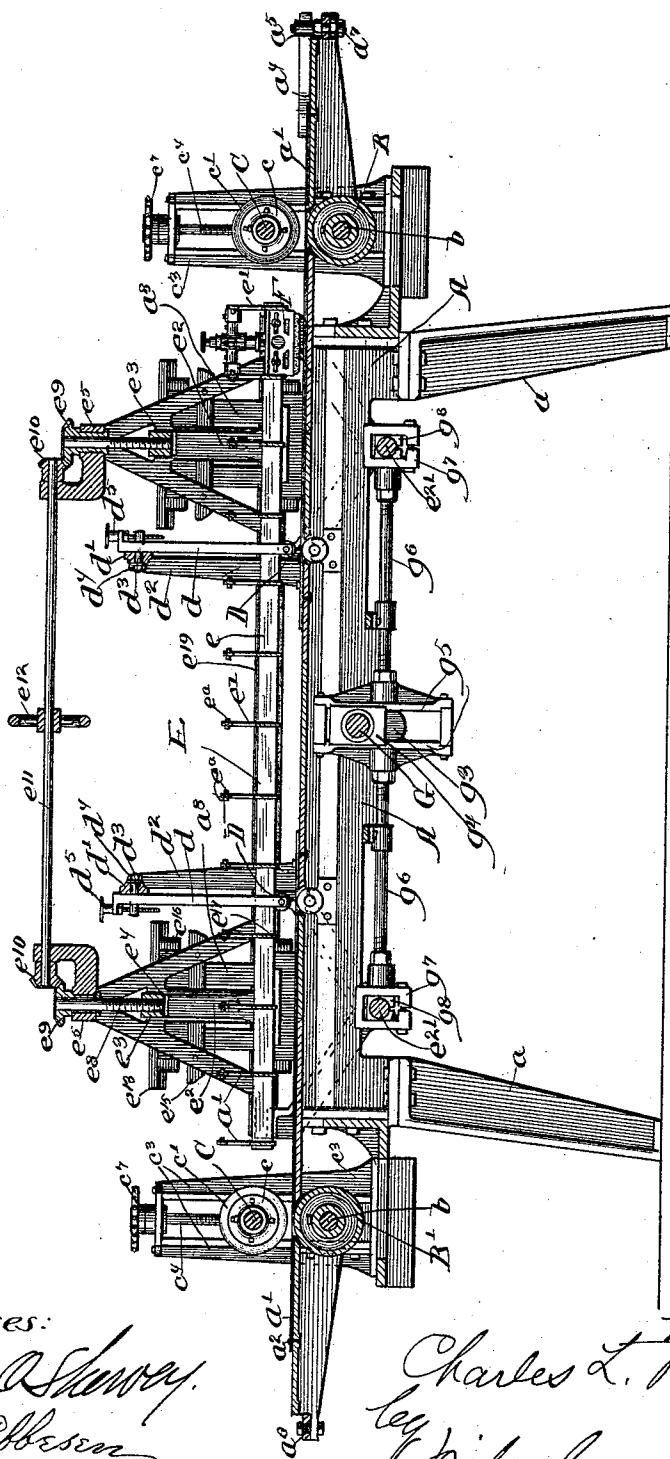
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Fig. 3.



Witnesses:

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Charles L. Ruehs
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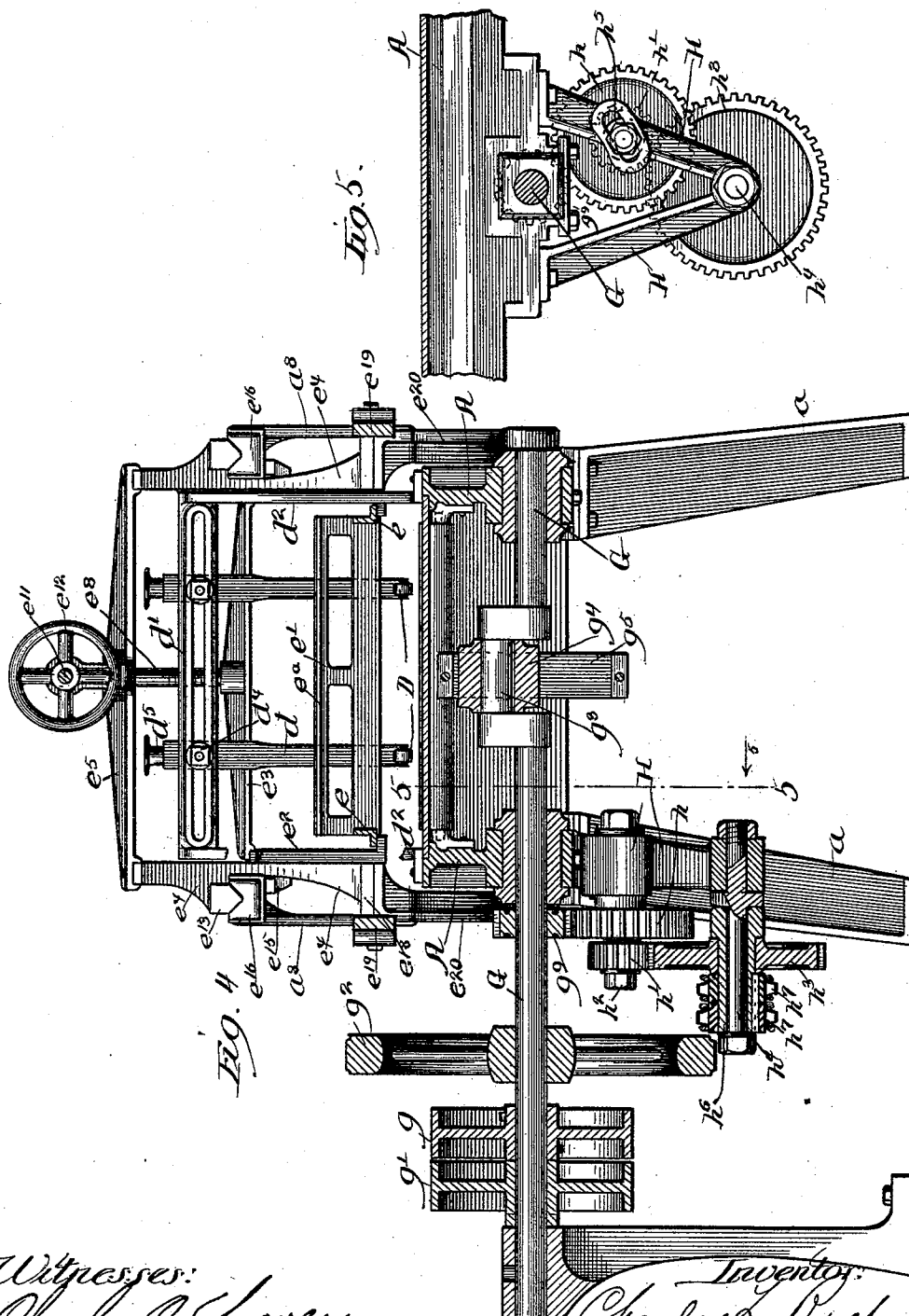
(No Model.)

6 Sheets—Sheet 4.

C. L. RUEHS.
SANDPAPERING MACHINE.

No. 495,104.

Patented Apr. 11, 1893.



Witnesses:
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A. J. H. Ebbesen

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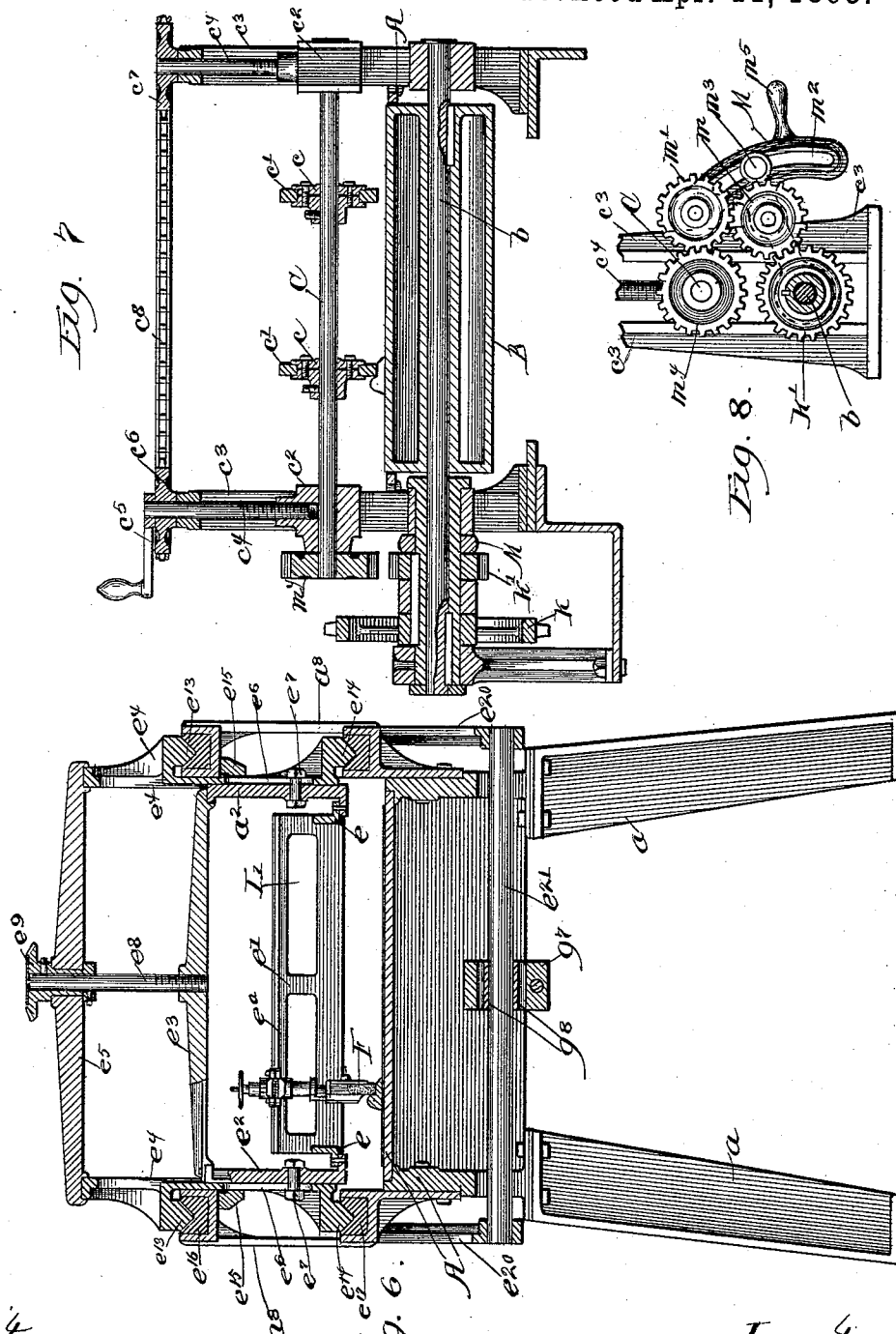
(No Model.)

6 Sheets—Sheet 5.

C. L. RUEHS.
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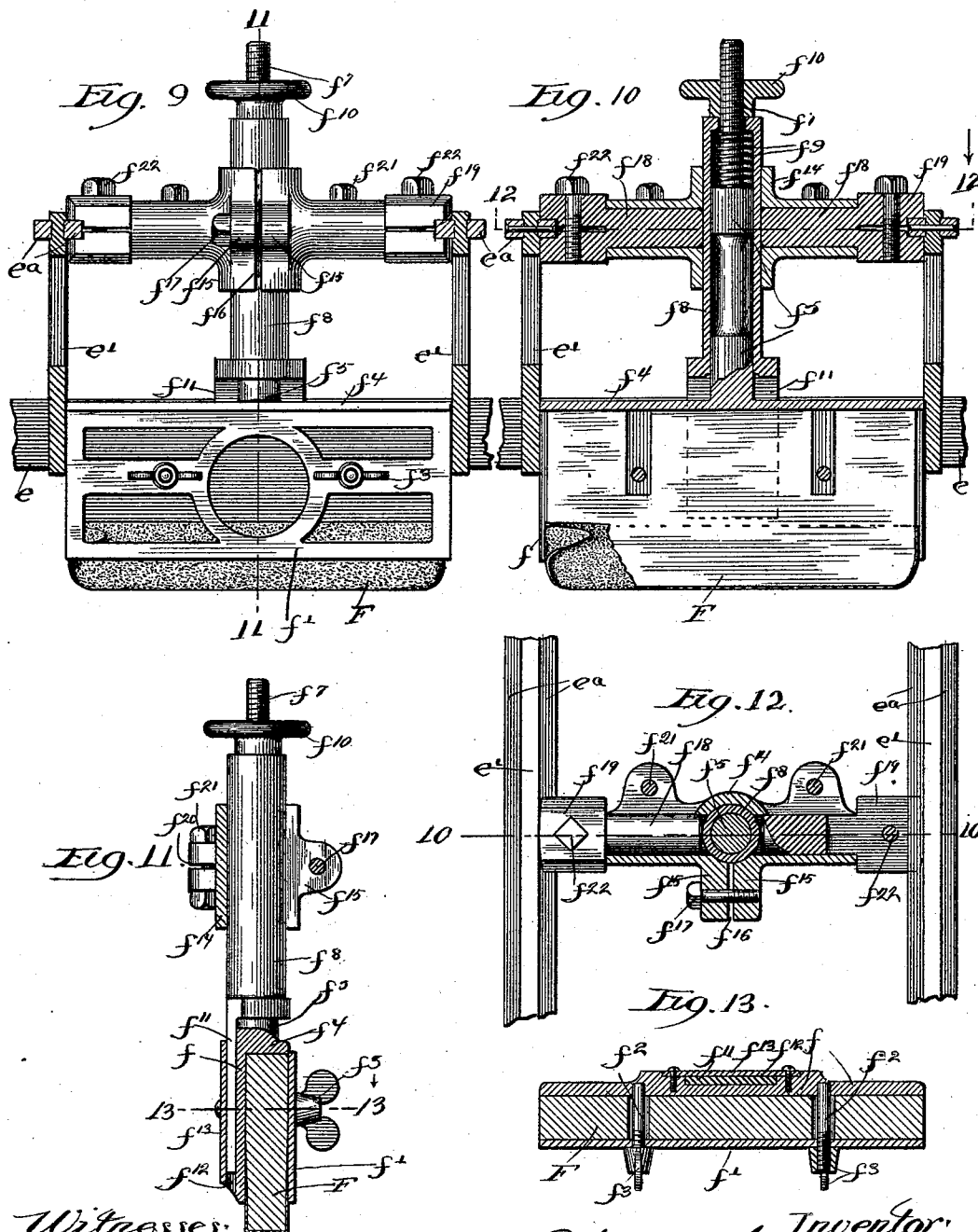
(No Model.)

6 Sheets—Sheet 6.

C. L. RUEHS.
SANDPAPERING MACHINE.

No. 495,104.

Patented Apr. 11, 1893.



Witnesses:

Charles A. Shewey.
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Inventor:
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UNITED STATES PATENT OFFICE.

CHARLES L. RUEHS, OF CHICAGO, ILLINOIS.

SANDPAPERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 495,104, dated April 11, 1893.

Application filed December 5, 1892. Serial No. 454,090. (No model.)

To all whom it may concern:

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

My invention relates to certain improvements in sandpapering machines made in the construction of a complete and practical working machine, said improvements having chiefly to do with the details of the construction by means of which the difficulties encountered in such a machine have been overcome.

I shall first describe clearly and in detail the entire machine in all its parts, and shall thereafter definitely point out and describe the different features which I believe to be novel.

The drawings presented herewith comprise thirteen figures, of which, Figure 1 is a plan of my improved machine. Fig. 2 is an elevation thereof, the view being taken from a section through the driving shaft in line 2—2, of Fig. 1, in the direction of the arrow 2. Fig. 3 is a vertical longitudinal section taken in line 3—3, of Fig. 1, looking in the direction of the arrow 3 in said figure. Fig. 4 is a vertical transverse section taken in line 4—4, of Fig. 1, looking in the direction of the arrow 4. Fig. 5 is a partial vertical section taken in line 5—5, of Fig. 4, looking in the direction of the arrow 5. Fig. 6 is a transverse vertical section in line 6—6, of Fig. 1, looking in the direction of the arrow 6. Fig. 7 is a transverse vertical section in line 7—7, of Fig. 1, looking in the direction of the arrow 7. Fig. 8 is a vertical section in line 8—8, of Fig. 1. Fig. 9 is a side elevation of a block holder hereinafter described. Fig. 10 is a vertical section of said block holder in line 10—10, of Fig. 12. Fig. 11 is a section in line 11—11, of Fig. 9, certain parts in said figure being shown in full. Fig. 12 is a horizontal section in line 12—12, of Fig. 10; and Fig. 13 is a horizontal section in line 13—13, of Fig. 11.

The machine illustrated by means of the figures is designed for sandpapering moldings and consists, first, of a bed supported by a rigid frame and provided with feed-rollers

and guides to carry the molding over the bed in a predetermined path and to firmly confine it to said path as well as advancing it forcibly therein against any resistance encountered from other portions of the machine; second, of a reciprocating frame supported in guides upon the frame; third, of a series of blocks having under sides conforming to portions of the surface of the molding and provided with holders having means of attachment to support them from the reciprocating frame; and fourth, a system of gearing adapted to take power from a single driving shaft and apply it both to the feed devices and to the reciprocating frame.

Taking up first the frame and feed, the former is seen as consisting of a bed, A, (see Fig. 1) supported upon legs, *a*. To guide the molding across this bed, bars, *a'*, are fastened to the latter by means of screws, *a²*, threaded to a series of holes, *a³*, in the bed. The holes, *a³*, enable the bars, *a'*, to be moved back and forth whenever desired, and also allow the use of a number of these bars when two or more strips of molding are to be passed through side by side. A guiding arm, *a⁴*, passes through a hole in a bolt, *a⁵*, adapted to slide back and forth in a slot, *a⁶*, in the bed and tightened in any position by means of a nut, *a⁷*, (see Fig. 3.) The bolt can be slipped back and forward in the slot and the arm pivots upon the bolt so that its free end, preferably curved as shown, may be brought within the proper distance from the bar, *a'*, to crowd the molding tightly against the latter. These arms as well as the bars may be duplicated as desired to enable several pieces of molding to be simultaneously passed through the machine.

The feed, irrespective of its gearing is best shown in Figs. 1, 3 and 7. Looking at Fig. 3, two feed rollers, B, B', are seen at opposite ends of the machine journaled in fixed positions therein, and arranged with their upper surfaces a slight distance above the bed so as to prevent the molding from being pressed tightly upon the latter. Above these fixed rollers is a shaft, C, having fast upon it feed-rollers, *c*, faced with elastic rings, *c'*, as of rubber. The shaft, C, is journaled in two blocks, *c²*, arranged to slide up and down between uprights, *c³*, and held in any desired

position by means of screws, c^4 , threaded in the blocks and turned by means of a crank, c^5 , upon one, and sprocket-wheels, c^6 , c^7 , and connecting chain, c^8 , transmitting motion to the other. The rollers, c , are adjustable upon the shaft, C , and as many can be used as are found necessary. These rollers are moved back and forth upon the shaft to bring them directly over the different strips of molding and they are then pressed down tightly upon the latter by means of the raising and lowering devices above described. The shaft, C , and the roller, B , are run at the same speed and they clamp the molding firmly between them, each aiding the other to crowd it forward through the machine. The elastic faces of the rollers, c , conform to the face of the molding without injury to the latter.

To aid the devices, just mentioned, in keeping the molding flat upon the bed in case it should be warped, I have provided rollers, D , (see Figs. 3 and 4.) These rollers are carried by arms, d , secured to cross pieces, d' , carried by uprights, d^2 , upon the frame. The cross pieces, d' , are slotted as are also the arms, d , and bolts, d^3 , headed upon the side of the arms, pass through both slots and are provided with nuts, d^4 , by means of which the parts are clamped together. To aid in crowding down the rollers upon the molding, thumb-screws, d^5 , are threaded in the heads of the bolts, d^3 , and arranged to turn in the arms, so that the latter may be forced up and down by turning the screws.

The reciprocating frame is rectangular in shape and supported at or near its four corners by devices which are exactly alike. Hence, a description of those at one corner will be sufficient. These devices are best shown in Figs. 1, 2, 3 and 6. The frame itself is shown at E , as composed of side pieces, e , (see Figs. 1 and 6) united by cross pieces, e' . Looking at the left hand portion of the various figures and the top of Fig. 1, the frame, E , is seen to be carried first by inner yokes made up of uprights, e^2 , (see Fig. 6,) to which the side pieces, e , are fastened, and cross pieces, e^3 . These inner yokes are arranged to slide up and down in outer yokes composed of the uprights, e^4 , and cross pieces, e^5 . The uprights, e^4 , are slotted at e^6 , and bolts, e^7 , extend through the slots and are fastened to the inner yokes to guide the latter up and down. Screw shafts, e^8 , are threaded in the cross pieces, e^3 , of the inner yokes and journaled in the cross pieces, e^5 , of the outer yokes. Above the latter they have fast upon them miter gears, e^9 , geared together by means of miter gears, e^{10} , (see Fig. 2) upon a connecting shaft, e^{11} , provided with a hand wheel, e^{12} . By means of this hand wheel the inner yokes upon the opposite ends of the frame, E , can be simultaneously raised or lowered with respect to the outer yokes. The outer yokes have at each side three slides, e^{13} , e^{14} , e^{15} , the first two resting upon ways, e^{16} , e^{17} , carried by uprights, a^8 , rising from the frame of the ma-

chine. The slide e^{15} , bears upon the under surface of the upper of these ways and prevents the outer yokes from being lifted.

Looking at Fig. 1, the uprights, e^4 , will be seen to be provided with lateral extensions, e^{18} , connected by longitudinal bars, e^{19} , extending from end to end of the frame E , upon its opposite sides. Depending from these longitudinal pieces are side brackets, e^{20} , connected by shafts, e^{21} , extending across beneath the bed and in position to be conveniently connected with the driving gear.

The reciprocating frame, E , is designed to carry a series of blocks faced with sandpaper or sand, and Figs. 9 to 13, both inclusive, illustrate the construction of holders designed to support these blocks in the frame. The cross pieces, e' , of the frame, E , (see Fig. 3) are provided upon each side with ribs or flanges, e^a . These cross pieces, e' , and flanges, e^a , are shown enlarged in Figs. 9, 10 and 12. The block itself is seen at F , and is clamped between two plates, f , f' , (see Figs. 11 and 13) by means of bolts, f^2 , and thumb nuts, f^3 . The plate, f , has a shoulder, f^4 , against which the upper edge of the block bears and a rounded portion f^5 , (see Fig. 10) extending up from this shoulder and terminating in a reduced threaded portion, f^7 . A collar, f^8 , is bored to receive the projection, f^5 , except at the top where the bore is reduced to a size barely sufficient to allow the threaded portion, f^7 , to move freely therein. Below this a coiled spring, f^9 , is interposed pressing downward upon the projection, f^5 , which, however, is prevented, being crowded below a predetermined limit by means of a nut, f^{10} . This nut enables the block to be raised or lowered, and the spring permits the same to yield upward to give that delicacy of touch which is necessary to produce a highly finished surface with sandpaper. A downwardly projecting flattened portion, f^{11} , of the collar, f^8 , slides in a groove f^{12} , in the plate, f , and is held in said groove by means of a covering plate, f^{13} . This flattened portion prevents the block from turning with respect to the collar, f^8 . Said collar is itself carried by a head, f^{14} , bored centrally to receive the collar and provided upon one side with lugs, f^{15} , separated by a slit, f^{16} , extending to the collar and provided with a clamping screw, f^{17} , by means of which the collar may be tightly clamped against rotation. The head, f^{14} , has lateral arms extending in both directions from the collar and each of these arms is bored to receive the rounded shank f^{18} , of a clamp, f^{19} . These arms are tightened about the rounded shanks by means of slits, f^{20} , (see Fig. 11) and bolts, f^{21} , and the clamps themselves are grooved at their ends to receive the flanges, e^a , and have slits extending beyond the grooves to enable the sides of the latter to be tightened upon the flanges by means of screws, f^{22} . This block holder enables the block to be adjusted in every direction necessary and renders it easy of re-

moval and displacement. In use, a block is first provided with a lower edge conforming to such a portion of the molding to be finished as may be thought necessary. Said lower edge is then covered with sandpaper, the same being folded up about the corners and the whole tightly clamped between the plate, f , and the plate, f' , holding the sandpaper closely to the block and leaving no loose edges to tear upon any unevenness in the molding. The screws f^{22} , f^{17} , are then loosened, the head piece, f^{14} , turned upon the collar, f^8 , until the holder can be slipped down between the cross pieces, e' , as seen at the right in Fig. 1. As soon as the head, f^{14} , is low enough it is turned back upon the collar until it engages with the flanges, e^a , by means of the grooves in the clamp, f^{19} . These clamps are then tightened upon the flanges and the screw, f^{17} , turned up to clamp the collar in the head. This secures the holder and the block in the frame. If lateral adjustment of the block is necessary, the screws, f^{21} , are loosened and the head turned upon the rounded portions, f^{18} , of the clamps, f^{19} . If vertical adjustment of the block is necessary the same is effected by means of the nut, f^{10} .

Passing to the gearing by means of which the various parts of the machine are driven the main driving shaft is seen at G, Figs. 1 and 4, and is provided with fast and loose pulleys, g, g' , to carry the belt which furnishes the power. A balance wheel, g^2 , aids in steadying the motion. The shaft, G, is journaled in suitable boxes upon opposite sides of the frame, A, and in its middle portion beneath the bed has a double crank, g^3 , journaled in a box, g^4 , (see Fig. 3) arranged to slide up and down between two guides, g^5 , secured together at the top and bottom by cross pieces and carried by sliding rods, g^6 , extending along beneath the bed to the cross shafts, e^{21} . These sliding rods are secured at their ends to clamps, g^7 , tightened upon boxes, g^8 , surrounding the cross shafts, e^{21} . The clamps, g^7 , are arranged so that they may be adjusted vertically upon the boxes, g^8 , to bring the sliding rods, g^6 , into alignment. This completes the connection between the driving shaft and the reciprocating frame, E, forming the rotation of the former into the horizontal reciprocating motion which the latter requires to carry the blocks back and forth upon the molding. The driving shaft, G, also has fast upon it a pinion, g^9 , (see Figs. 2 and 4.) This pinion meshes with a gear, h , which, together with pinion, h' , fast to it, are journaled upon a short pin, h^2 , carried by a bracket, H, depending from the frame. The pinion, h' , meshes with a gear, h^3 , loose upon a pin, h^4 , also carried by the bracket, H. The pin, h^2 , is adjustable in a slot, h^5 , (see Fig. 5,) said slot being in the form of a curve concentric with the main driving shaft, G. The adjustment of the pin in the slot does not therefore disturb the meshing of the gear, h , with the pinion,

g^9 , but it does enable larger or smaller pinions to be substituted for the pinion, h' , so as to vary the speed of the gear, h^3 . This gear, h^3 , is fast upon a collar, h^6 , turning upon the pin, h^4 , and said collar also has fast upon it two sprocket-wheels, h^7 , carrying chains h^8 , leading to sprocket-wheels, k , fast upon the shafts which carry the feed rollers, B, B'. To furnish power to the upper feed shaft, C, which, it will be remembered, is adjustable vertically, an oscillating arm, M, (see Fig. 8) is pivoted upon the shaft, b , carrying two loose gears, m, m' , in mesh with each other, the former of which is in mesh with a pinion, k' , upon the shaft, b . The oscillating arm is provided with a slot, m^2 , and a clamping bolt, m^3 , to hold the arm in any desired position. When the upper feed rollers are to be adjusted this arm is dropped down until the gear, m' , is free from the gear, m^4 , upon the shaft, C, and the latter is raised or lowered as much as necessary, after which the arm is raised by means of a handle, m^5 , until the gear, m' , meshes with the gear, m^4 , when it is clamped in place.

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

1. In a machine for sandpapering molding, the combination with the bed, of the rollers, c , provided with elastic faces, and adjustably secured upon a shaft, C, itself adjustable vertically with respect to the bed; substantially as described.

2. In a machine of the class described, the combination with a suitable bed provided with guides, of a series of longitudinally reciprocating blocks adjustable both vertically and laterally with respect to the bed; substantially as described.

3. In a machine of the class described, the combination with the bed, of suitable guides supported therefrom upon opposite sides, sliding yokes adapted to move in said guides, and a reciprocating block carrying frame carried by and vertically adjustable in said yokes; substantially as described.

4. In a machine of the class described, the combination with the bed, of two pairs of oppositely arranged guides supported therefrom, outer yokes adapted to slide in the two pairs of guides, inner yokes secured to and vertically adjustable with respect to the outer yokes and a reciprocating block carrying frame carried by the inner yokes; substantially as described.

5. In a machine of the class described, the combination with the bed, of the frame, E, carried by inner yokes at its opposite ends, said inner yokes being secured to outer yokes sliding in suitable guides supported from the frame, the screws, e^8 , gears, e^9, e^{10} , connecting shaft, e^{11} , and hand-wheel, e^{12} , by means of which the frame, E, may be bodily adjusted vertically with respect to the bed; substantially as described.

6. In a machine of the class described, the combination with the bed provided with suitable guides, of the frame, E, carried at its op-

posite end by the inner adjustable and outer sliding yokes, said outer yokes being provided with lateral extensions, e^{18} , connected by longitudinal bars, e^{19} , and provided with side brackets, e^{20} , connected by shafts, e^{21} , extending across beneath the bed and furnishing a convenient means of connection with the driving gear; substantially as described.

7. In a machine of the class described, the combination with a reciprocating frame, of a series of blocks, F, secured to said frame by means of a clamping device vertically movable against a yielding force in a holder, itself adjustable both vertically and laterally in the frame; substantially as described.

8. In a machine of the class described, the combination with a reciprocating frame, of a series of blocks, F, secured to said frame by means of a clamping device vertically movable against a yielding force in a collar adjustably clamped in a head, itself adjustably clamped to the frame; substantially as described.

9. In a machine of the class described, the combination with the reciprocating frame, of a series of blocks, F, secured to said frame by means of a clamping device, having an upwardly projecting pin provided at the top with an adjusting nut, a vertical collar about said pin containing a spring pressing down-

ward upon the pin, and a horizontal head clamped about the collar and pivoted at its ends to clamps engaging with the frame; substantially as described.

10. In a machine of the class described, the combination of a reciprocating rod, g^6 , provided at its end with a clamp, g^7 , a box, g^8 , adjustable in said clamp, and a shaft, e^{21} , carried in said box; substantially as described.

11. In a machine of the class described, the combination with the bed, of the gears, g^9 , h^8 , journaled in fixed positions and the connecting gears, h , h' , fast together and journaled upon a pin adjustably in a curved slot concentric with the gear, g^9 ; substantially as described.

12. In a machine of the class described, the combination with a bed, of a shaft, b , journaled in a fixed position, a shaft, C, adjustable with respect thereto, gears upon the ends of the two shafts and suitable gearing connecting the two, journaled upon an oscillating frame pivoted upon one of the shafts and adjustable with respect to the other; substantially as described.

CHARLES L. RUEHS.

Witnesses:

CHARLES O. SHERVEY,
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