

No. 721,922.

PATENTED MAR. 3, 1903.

A. J. STEPHENS & C. A. GOODALE.  
MACHINE FOR PLANING FLOORS.

APPLICATION FILED JAN. 31, 1902.

NO MODEL.

3 SHEETS—SHEET I.

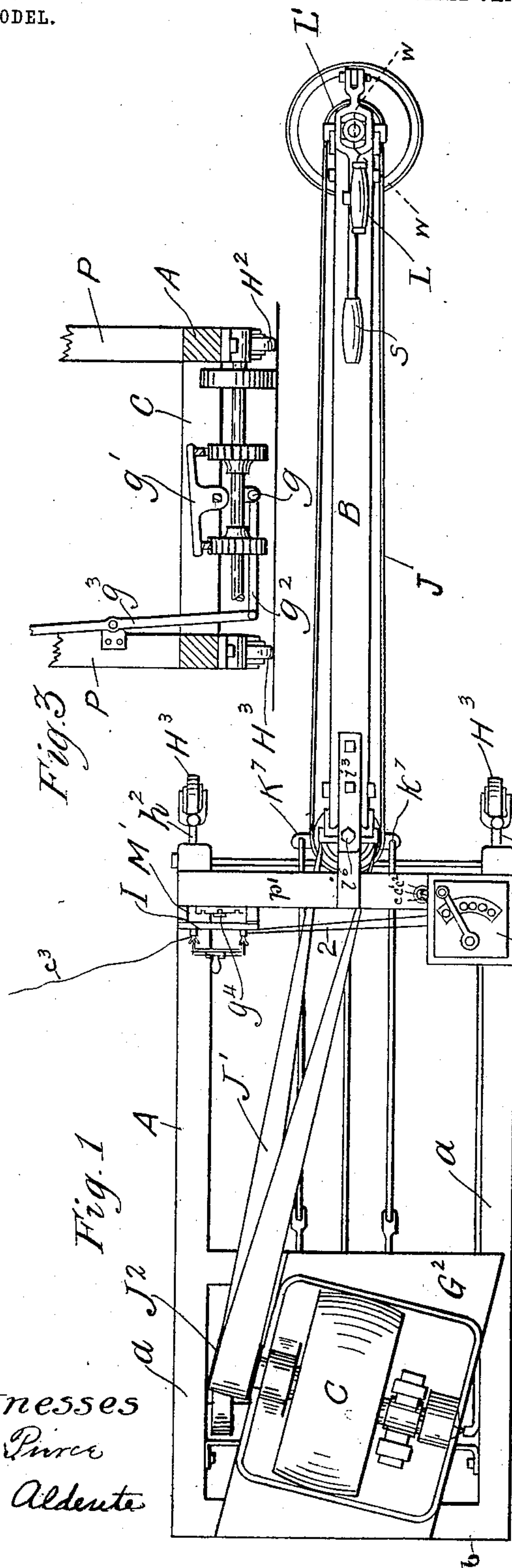


Fig. 1

Fig. 3

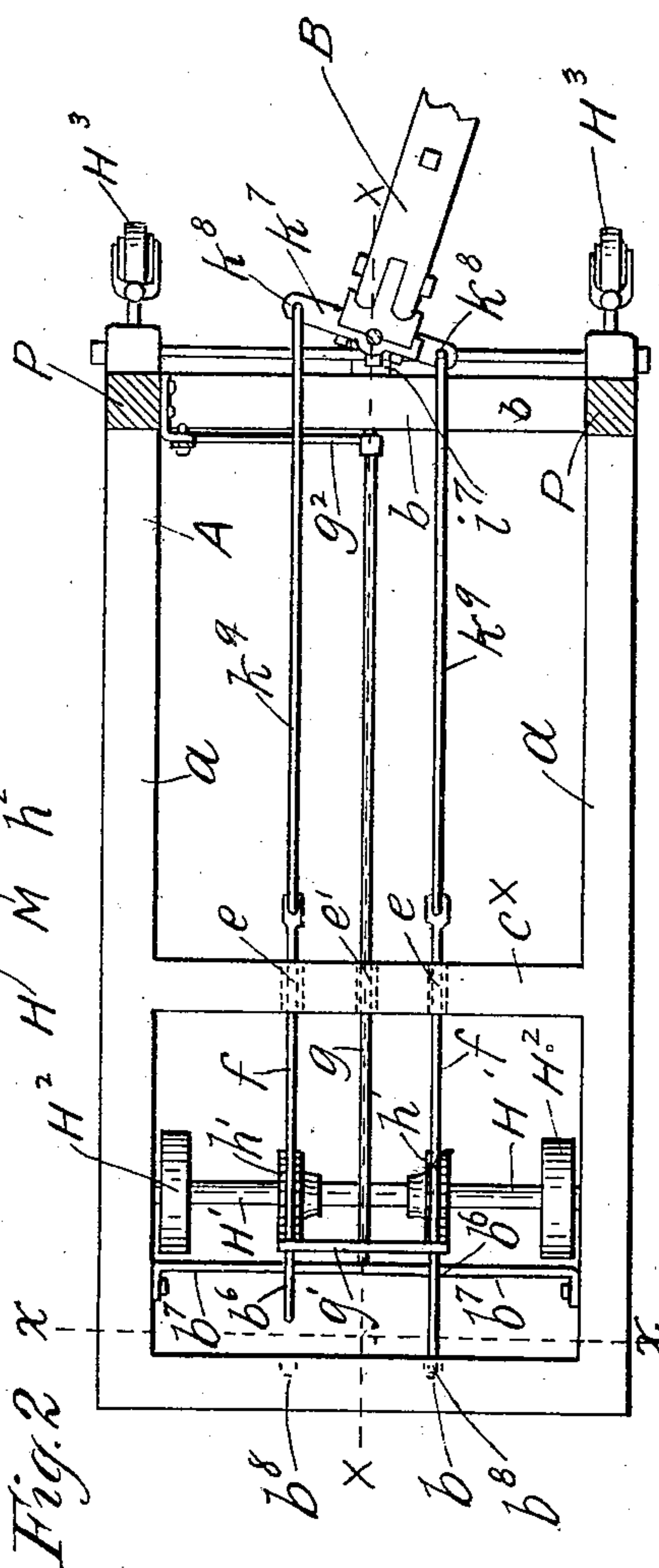


Fig. 2

Witnesses  
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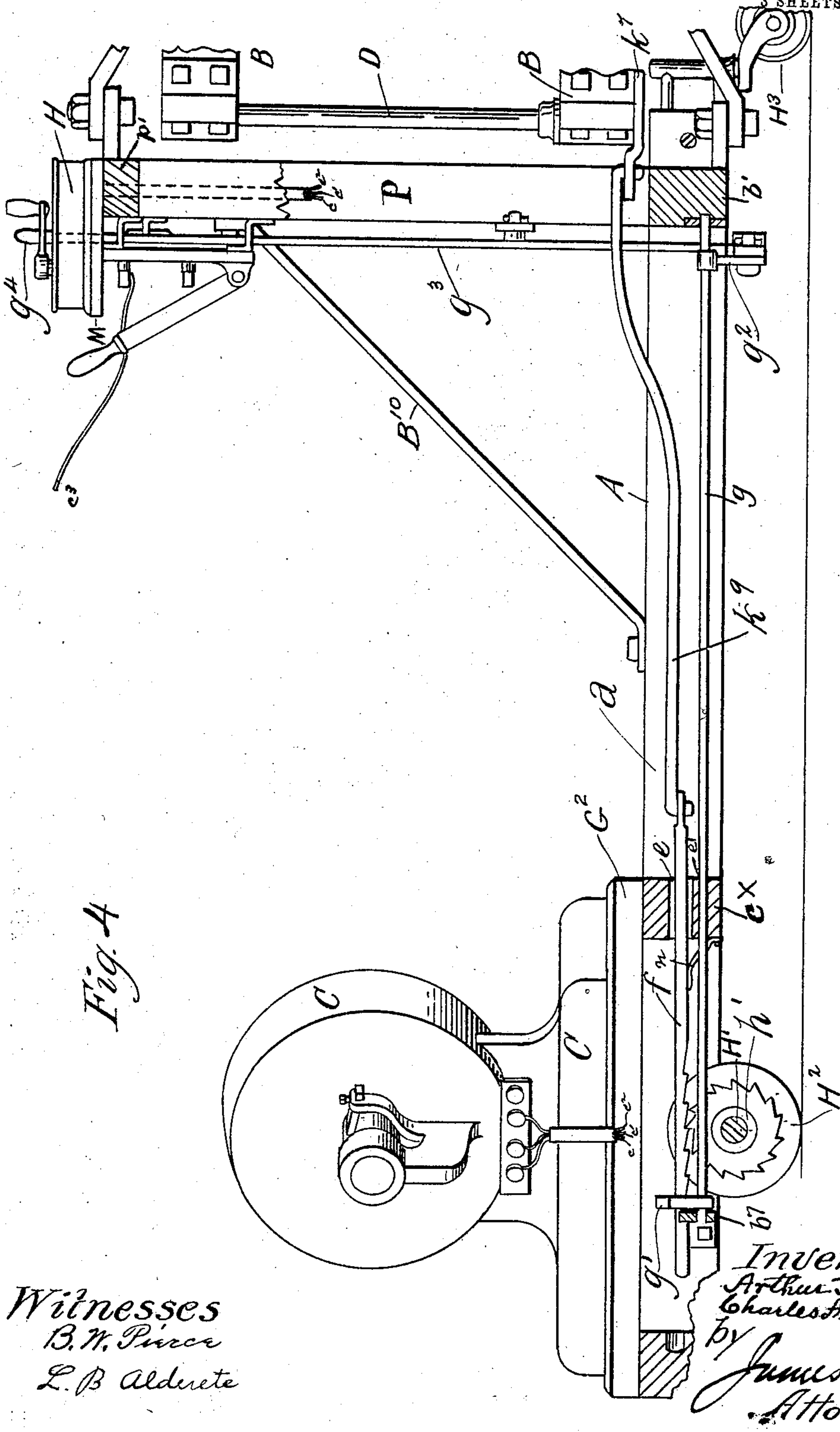


Fig. 4

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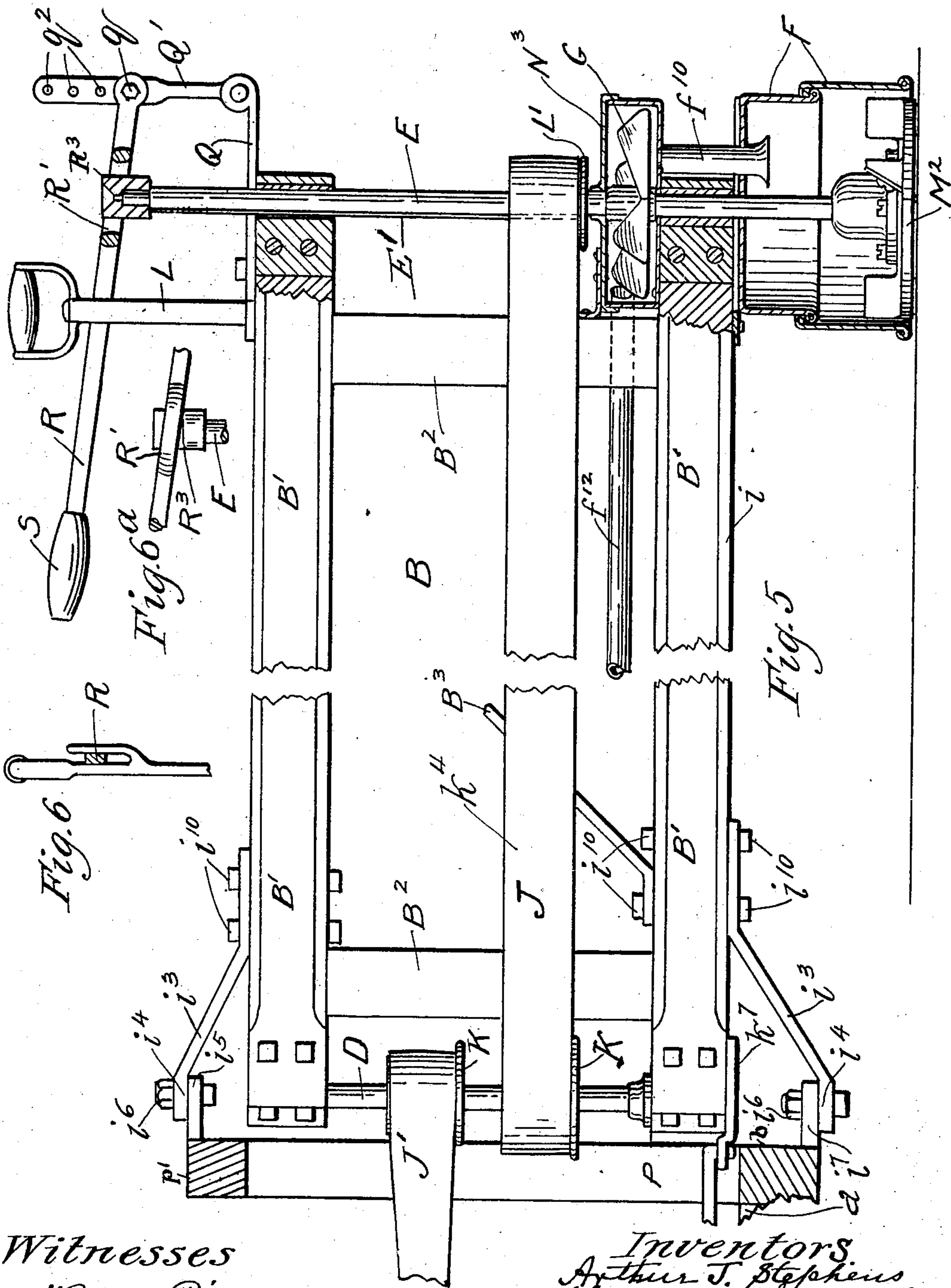
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3 SHEETS—SHEET 3.



Witnesses

B. W. Pierce

L. B. Alden

Inventors  
Arthur J. Stephens  
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# UNITED STATES PATENT OFFICE.

ARTHUR J. STEPHENS AND CHARLES A. GOODALE, OF PASADENA, CALIFORNIA, ASSIGNORS TO THE ELECTRIC FLOOR FINISHING COMPANY, OF PASADENA, CALIFORNIA, A CORPORATION OF CALIFORNIA.

## MACHINE FOR PLANING FLOORS.

SPECIFICATION forming part of Letters Patent No. 721,922, dated March 3, 1903.

Application filed January 31, 1902. Serial No. 92,077. (No model.)

*To all whom it may concern:*

Be it known that we, ARTHUR J. STEPHENS and CHARLES A. GOODALE, citizens of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Machine for Planing or Smoothing Surfaces, of which the following is a specification.

This invention relates to machines for planing and smoothing surfaces, and particularly to those for planing and smoothing floors; and some of the objects of the invention are to provide a machine of this general character which will be simple and cheap in construction and at the same time efficient in operation.

Another object of the invention is to provide a machine capable of being moved over the surface to be operated upon without injury thereto and to plane and smooth evenly and rapidly.

A further object of the invention is to provide for the removal of the dust and dirt occasioned by the operation of the machine, so that the same will not injure the other parts of the building.

With these and other objects in view the invention consists, essentially, in the construction, combination, and arrangement of parts substantially as more fully described in the following specification and illustrated in the accompanying drawings, forming part of this application, in which—

Figure 1 is a top plan view of the entire machine. Fig. 2 is a top plan view, partly in section and partly broken away, of the carriage with the motor removed therefrom. Fig. 3 is a transverse sectional view of the rear end of the carriage, taken on line  $x x$  of Fig. 2 and parts being broken away. Fig. 4 is a longitudinal sectional view of the carriage, parts being broken away, illustrating the driving mechanism. Fig. 5 is an elevational view, partly broken away and partly in section, illustrating the cutter-frame. Figs. 6 and 6<sup>a</sup> illustrate details of construction.

Similar characters of reference designate corresponding parts throughout the several views.

Referring to the drawings, the reference character A designates a carriage or moving structure, of any desired form and construction and material, preferably embodying parallel side bars  $a$  and end bars  $b$ , and from the forward corners of said frame preferably extend vertical posts P, preferably connected at the other end thereof by a cross piece or plate  $p'$ , and on the latter may be mounted a shelf or board M, whereon may be secured a rheostat H, having suitable electrical connections  $c$ ,  $c'$ , and  $c''$  with the motor C, which is preferably mounted with a platform  $G^2$  in the rear portion of the carriage A and main supply-wire  $c^3$ , substantially as illustrated in Figs. 1 and 4 of the drawings. A switch I is preferably mounted upon a support  $M'$ , formed on or connected with one of the posts P, Fig. 1, and the switch I is provided with suitable electrical connections 2 with the rheostat H in the usual manner. The carriage A is preferably mounted upon wheels or casters  $H^3$ , which may all be provided with swiveled connection or bearing to permit the easy movement of the carriage in all directions, and said wheels or casters are preferably provided with a rim or tire of soft material, so as not to injure or mar the surface over which the carriage is propelled.

Journaled in suitable bearings upon the under side of the side pieces  $a$  is a transverse driving or propelling shaft  $H'$ , carrying propelling friction-rollers  $H^2$ , fast thereon and preferably provided with a rim or tire of soft material to facilitate the frictional engagement between the same and the surface over which the carriage is propelled and also to prevent injury thereto, and on the shaft  $H'$  are secured ratchet-wheels  $h'$ , constructed to receive rack-rods  $f$ , preferably passing through openings  $e$  in a cross-piece  $c^x$  of the carriage A, and a spring  $n$  may be secured to the cross-piece  $c^x$  to normally elevate the rack-rods  $f$  out of engagement with the ratchet-wheels  $h'$ , said rack-rods being alternately depressed into engagement with the respective ratchet-wheels  $h'$  by the action of an oscillating frame  $g'$ , fast upon an oscillating shaft  $g$ , mounted in the forward end piece



*b* of the carriage A, passing through the openings *e'* in the cross-piece *c<sup>x</sup>* and mounted in a bearing in a brace-bar *b<sup>7</sup>*, adjacent to the shaft *H'*, Figs. 1 and 4 of the drawings. The oscillating rod *g* is preferably operated by a crank or arm thereon, with which is connected a link *g<sup>2</sup>*, attached to the lower end of an inter-pivoted lever *g<sup>3</sup>*, having a handle *g<sup>4</sup>*, by means of which construction the aforesaid parts are operated.

Formed on or connected with the front end piece *b* and the upper cross-piece *p'* of the carriage A are respectively brackets or extensions *i<sup>7</sup>* and *i<sup>5</sup>*, with which are pivotally connected plates or bars *i<sup>3</sup>*, connected with the longitudinal parallel members *B'* of the cutter-frame B, said members being preferably connected by cross-pieces *B<sup>2</sup>*, Fig. 5, and by means of this construction the cutter-frame may swing laterally in relation to the carriage A, which supports the same, and secured to the lower member *B'* of the cutter-frame is a plate *k<sup>7</sup>*, Figs. 1, 2, 4, and 5, having eyes *k<sup>8</sup>* to receive one end of pull-rods *k<sup>9</sup>*, connected with one end of the rack-rods *f*, so that the lateral movement of the cutter-frame (operated manually by means of the handle L) will reciprocate the respective rack-rods, which engage the alternate ratchet-wheels *h'* through the action of the oscillating frame *g'*, and thereby rotate the friction-wheels *H<sup>2</sup>* to propel the carriage.

Mounted in the pivoted end of the cutter-frame B is a driven shaft D, carrying two pulleys K, one whereof is connected by a belt *J'* with a driving-pulley *J<sup>2</sup>* on the shaft of the motor C, whereby the driven shaft D is actuated, and a cutter-shaft E is journaled in the free end of the cutter-frame B and is rotated through the mediation of a belt J, passing over a pulley *L'* on said cutter-shaft E and over the other pulley K on a driven shaft D, and a handle L may be provided upon the cutter-frame B, by means of which the same may be directed during the operation of the machine.

If found desirable in practice, a brace *B<sup>10</sup>* may be provided between one or both of the side pieces *a* and the posts or uprights P, and a brace-bar *B<sup>3</sup>* may be provided in the cutter-frame and may be secured in position at one end by bolts *i<sup>10</sup>*, connecting the plates or bars *i<sup>3</sup>* with the cutter-frame.

Preferably connected with the lower member *B'* of the cutter-frame near the free end thereof is a hood or casing F, desirably constructed of two telescopic sections, Fig. 5, within which is preferably rotatably mounted a cutter or smoothing head *M<sup>2</sup>*, which is carried by the cutter-shaft E, and the latter is preferably slidably and rotatably mounted in the cutter-frame and is constructed to be forced downwardly or depressed into working position by the operator exerting force upon a depressing-lever R, having a handle S and adjustably connected at *q* with a link *Q'*, hav-

ing a plurality of openings *q<sup>2</sup>* and pivoted to a plate or bracket Q, secured upon the upper member *B'* of the cutter-frame B, and said depressing-lever is preferably provided with a bifurcated or yoke portion *R'* to receive a collar or bearing *R<sup>3</sup>*, constructed to rotatably receive the reduced end of the cutter-shaft E, substantially as shown in Fig. 5 of the drawings.

A casing *N<sup>3</sup>* may be suitably secured upon the lower member *B'* of the cutter-frame to receive a suitable fan or blower G, preferably feathered upon the cutter-shaft E to permit the longitudinal movement thereof, and a pipe or funnel *f<sup>10</sup>* preferably connects the cutter-hood with the blower-casing *N<sup>3</sup>* in order that the dust and fine material may be withdrawn from the cutter-hood F by the action of the blower G, and to effect the discharge of the same from the blower-casing *N<sup>3</sup>* a flexible or other pipe *f<sup>12</sup>* may be connected therewith and terminate at any point or place of discharge.

The operation of this invention will be readily understood when taken in connection with the accompanying drawings and the following explanation thereof. The motor C is started, thereby rotating the driving-pulley *J<sup>2</sup>* on the motor-shaft and actuating the driving-belt *J'*, passing over said pulley and over one of the pulleys K on the driven shaft D in the rear of the cutter-frame, which shaft imparts motion to the cutter-shaft E by means of a belt J, passing over the pulley *L'* on the cutter-shaft and over the other pulley K on the driven shaft D, Figs. 1 and 5 of the drawings. The handle S is depressed, thereby forcing the cutter-head *M<sup>2</sup>* into operative position upon the surface to be treated, and the dust and small particles produced by the action of the cutter are drawn from the hood F out through the pipe *f<sup>10</sup>* into the blower-casing *N<sup>3</sup>* by the action of the blower G, carried by the cutter-shaft E, and the dust, &c., is forced from the blower-casing *N<sup>3</sup>* out through the discharge-pipe *f<sup>12</sup>*, which may extend outside of the compartment within which the machine is operated, thereby preventing the dust from accumulating therein. The cutter-frame is moved or swung back and forth over the surface to be operated upon by means of force exerted upon the cutter-frame by the operator who impels said frame in the desired direction through the lever or handle L, secured upon the upper free end of said frame, and by swinging the cutter-frame laterally in relation to the carriage the latter is propelled through the mediation of the wheels *H<sup>2</sup>*, rotated by the rack bars or rods *f*, attached to the pull-rods *k<sup>9</sup>*, carried by the cross-head or plate *k<sup>7</sup>*, attached to the lower member *B'* of the cutter-frame, as before explained.

It is not desired to confine this invention to the specific construction, combination, and arrangement of parts herein shown and described, and the right is reserved to make all



such changes in and modifications of the same as come within the spirit and scope of the invention.

We claim—

1. A floor-leveling device provided with a carriage, a smoothing-head carried thereby and movable laterally of the carriage and means for propelling the carriage operated by the lateral movement of said head.

2. A machine provided with a carriage having supporting-wheels, propelling-wheels carried thereby, a swinging frame, a smoothing device therein and means operated by the swing of the latter to actuate said propelling-wheels.

3. A machine provided with a carriage, a shaft movably mounted therein carrying propelling and ratchet wheels, a laterally-movable frame, a smoothing device therein and means operated by the lateral movement of said frame to engage said ratchet-wheels and propel the carriage.

4. A machine provided with a carriage, a shaft movably mounted therein carrying propelling and ratchet wheels, a laterally-movable frame, a smoothing device therein, rack-bars engaging said ratchet-wheels and connected with said cutter-frame and operated by the lateral movement of said cutter-frame.

5. A machine provided with a carriage, a shaft movably mounted therein carrying propelling and ratchet wheels, rack-bars engaging said ratchet-wheels, a laterally-movable frame connected with said rack-bars, a smoothing device in said frame and means to actuate said frame laterally to operate said propelling-wheels.

6. A machine provided with a carriage, a shaft movably mounted therein carrying propelling and ratchet wheels, rack-bars engaging said ratchet-wheels, a laterally-movable frame connected with said rack-bars, a smoothing device in said frame, and means for effecting the alternate engagement of said rack-bars and wheels by the lateral movement of said frame.

7. A machine provided with a carriage having supporting-wheels, propelling-wheels upon the carriage, a laterally-movable frame, a cutter carried by said frame and means operated by the lateral movement of said frame to actuate said propelling-wheels.

8. A machine provided with a carriage, a shaft movably mounted therein carrying propelling and ratchet wheels, a frame pivotally connected with said carriage, a cutter-head carried by said frame and means operated by the lateral movement of said frame to engage said ratchet-wheels and propel the carriage.

9. A machine provided with a carriage, a shaft movably mounted therein carrying propelling and ratchet wheels, a frame pivotally connected with one end of the carriage to

move laterally in relation thereto, a smoothing device in said frame, rack-bars connected with said frame and engaging said ratchet-wheels and means for effecting the alternate engagement of said rack-bars and wheels by the lateral movement of said frame.

10. A machine provided with a carriage carrying propelling and ratchet wheels, rack-bars normally out of engagement with the latter wheels, a laterally-movable cutter-frame having a cross-head connected with said bars so that the lateral movement of said frame operates said bars, an oscillating frame to force one or other of said bars into engagement with one or other of the ratchet-wheels, an oscillating rod attached to said frame and a lever connected with said rod to operate said frame.

11. A machine provided with a laterally-movable frame constructed to propel the same by the lateral movement of said frame, a cutter slidably mounted in said frame, a hood or casing for the cutter constructed to slide therewith and means for operating the cutter.

12. A machine provided with a laterally-movable frame constructed to propel the same by the lateral movement of said frame, a cutter, a telescopic casing or hood therefor and means for operating the cutter.

13. A machine provided with a laterally-movable frame constructed to be moved laterally and thereby effect the propulsion of the machine, a cutter hood or casing, a blower-casing, connection between said parts and means in the blower-casing to withdraw the dust from said hood.

14. A machine provided with a cutter-frame, a cutter-shaft slidably mounted therein, a blower-casing surrounding said shaft, a blower therein and slidable on said shaft and means to slide the shaft.

15. A machine provided with a sliding cutter-shaft, a blower-casing fast to the machine and surrounding a portion of said shaft, a blower in said casing feathered on said shaft and a depressing-lever connected with the machine and constructed to slide said shaft through said blower and casing.

16. A machine provided with a cutter-shaft revolubly and slidably mounted therein, means for revolving said shaft, a lever connected with the machine and movably engaging said shaft to slide the same, a blower feathered on said shaft, a cutter carried by said shaft and a cutter-hood upon said machine.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ARTHUR J. STEPHENS.

CHARLES A. GOODALE.

Witnesses:

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L. B. ALDERETE.