No. 654,428. Patented July 24, 1900.

W. M. BARNES.

IRONING MACHINE.

(Application filed Nov. 23, 1899.)

(No Model.) 3 Sheets—Sheet 1.

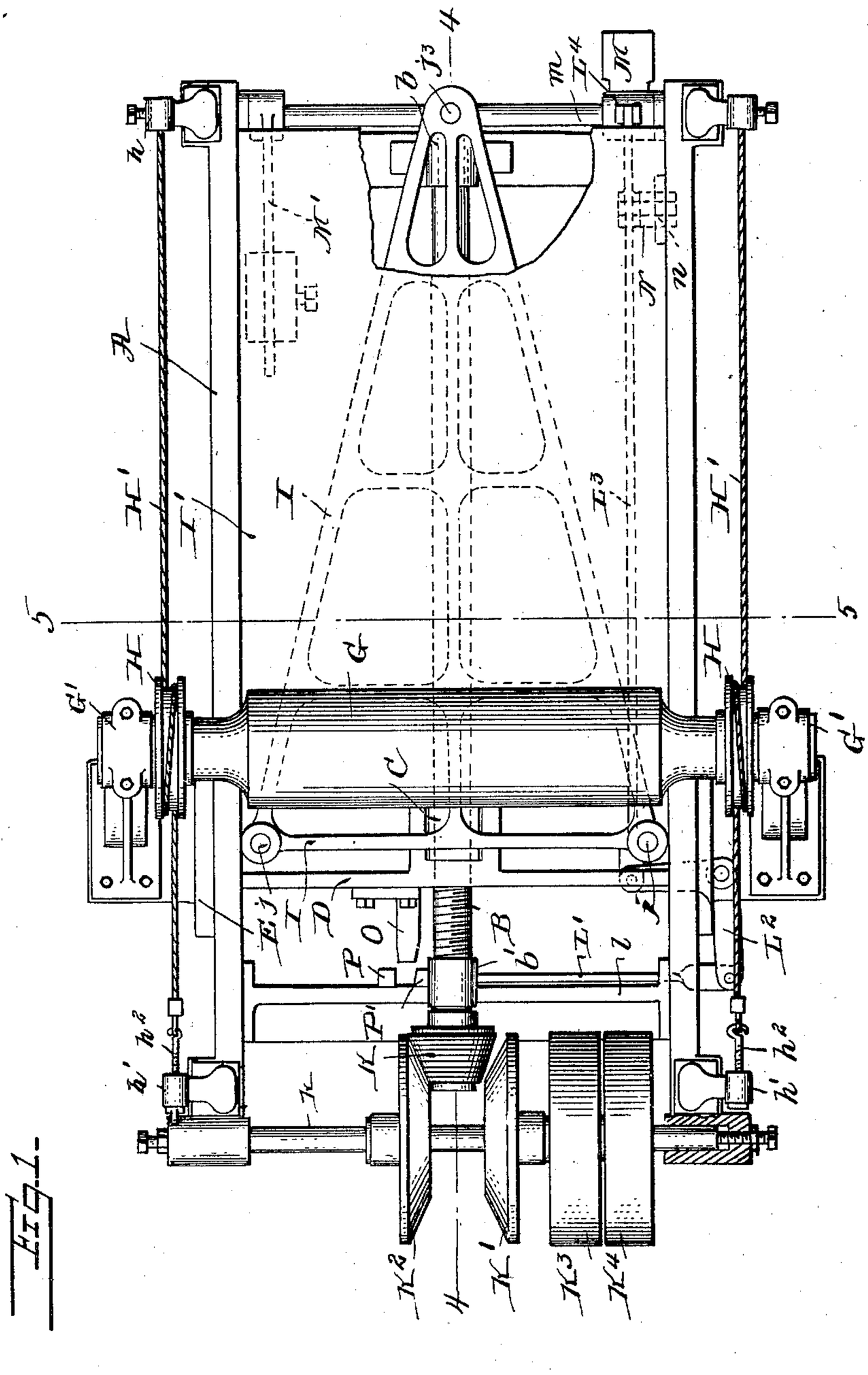

FIG. 1.

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Fig. 2.

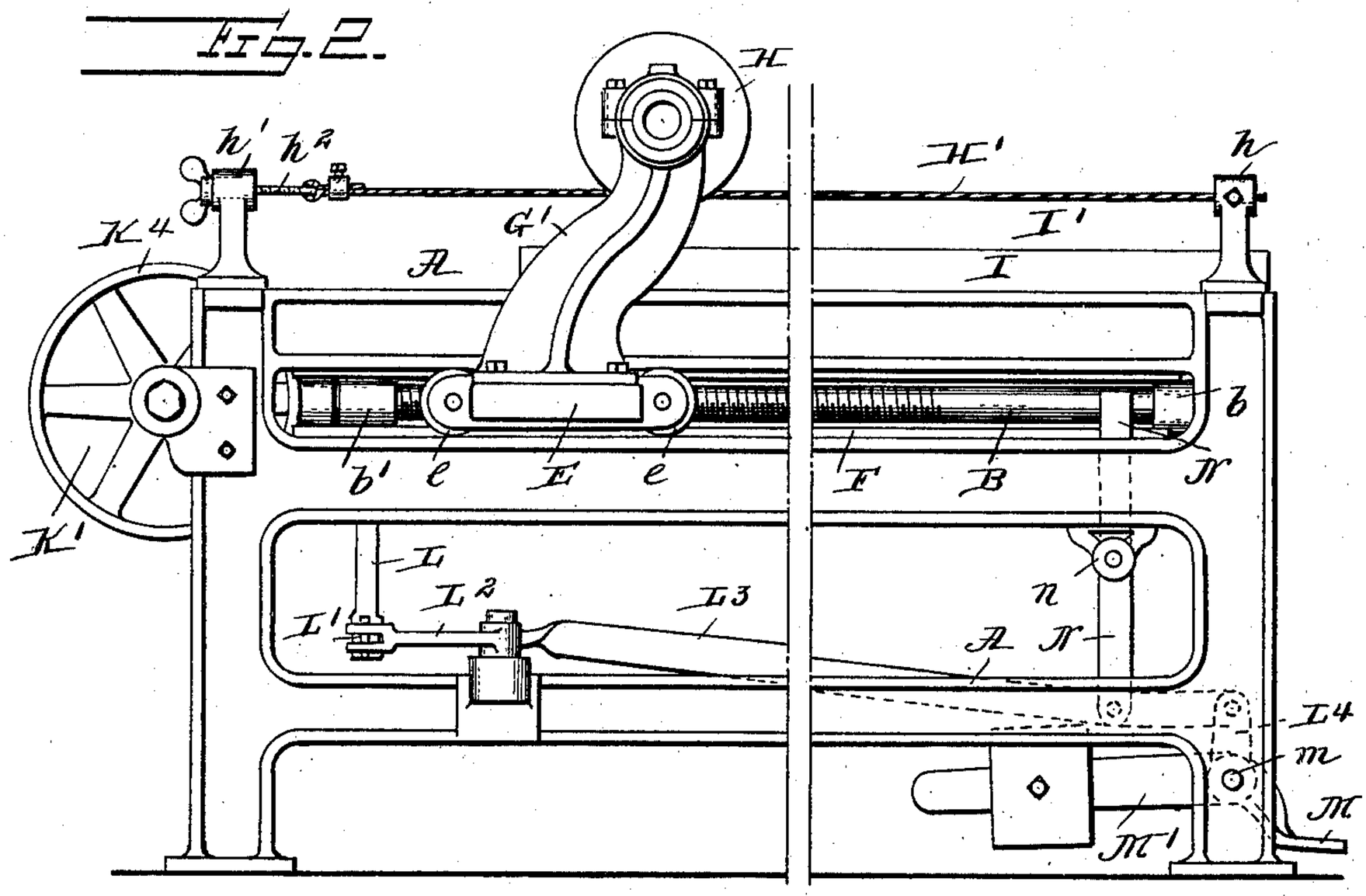

Fig. 3.

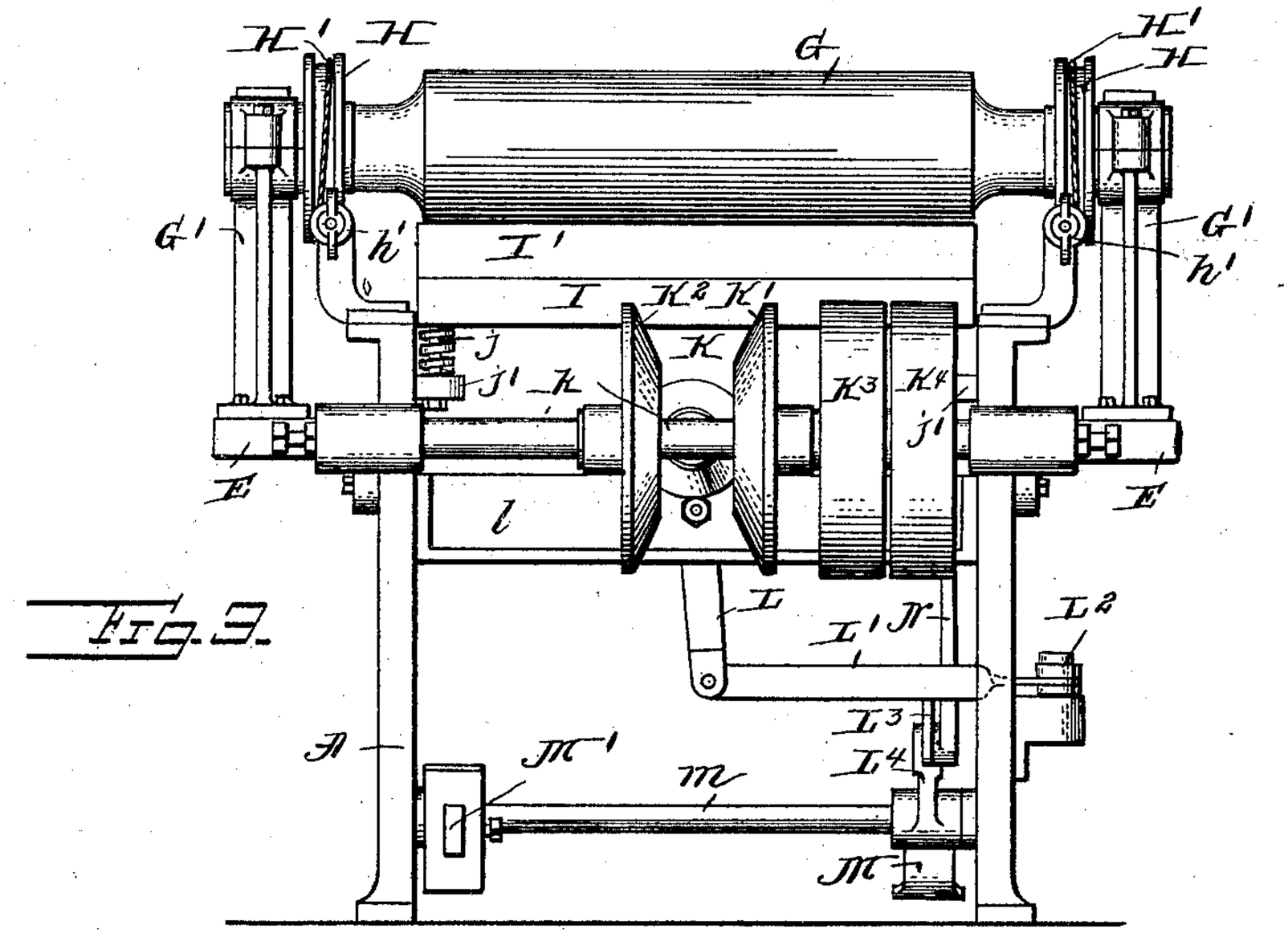

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Fig. 4.

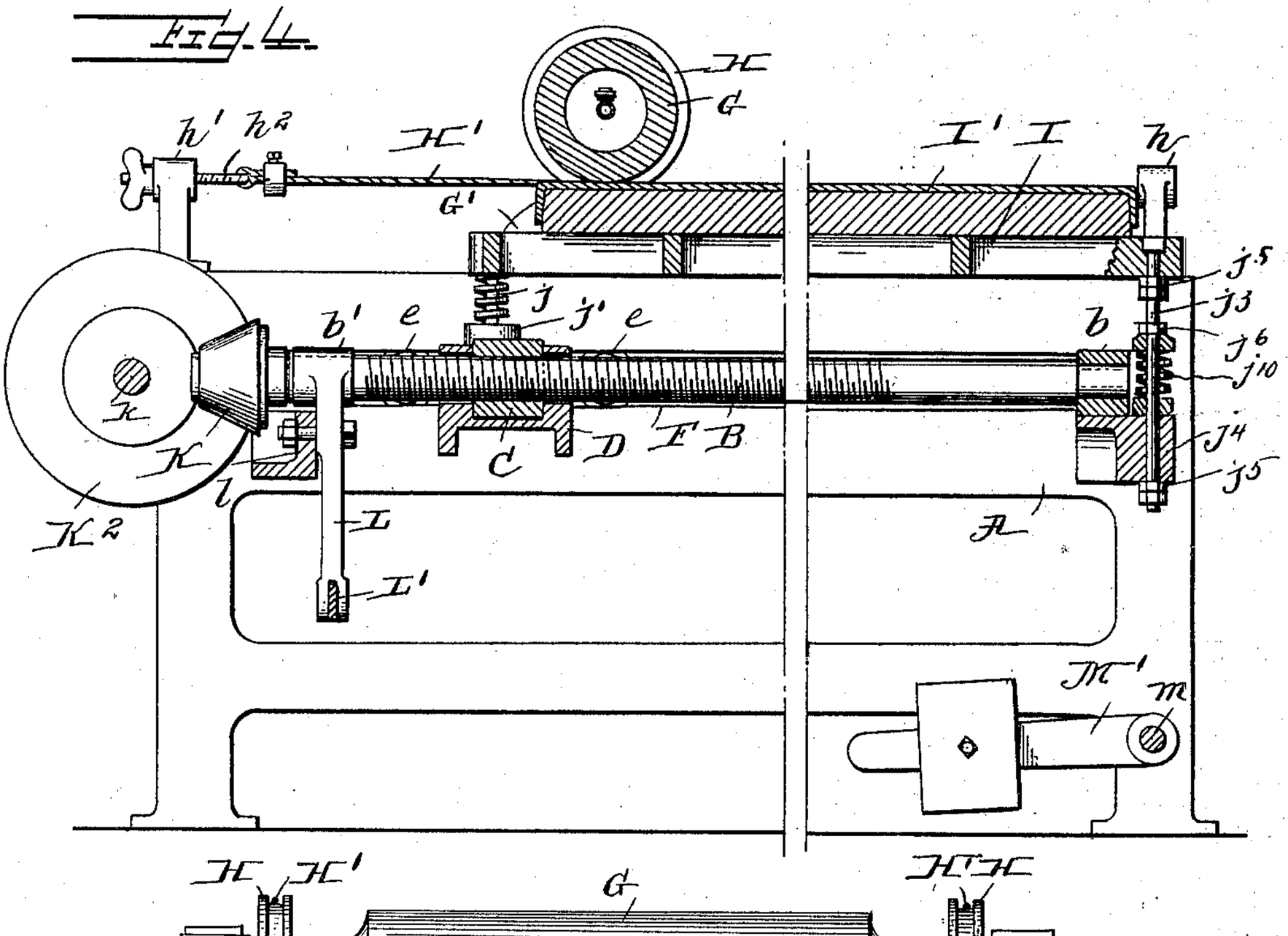
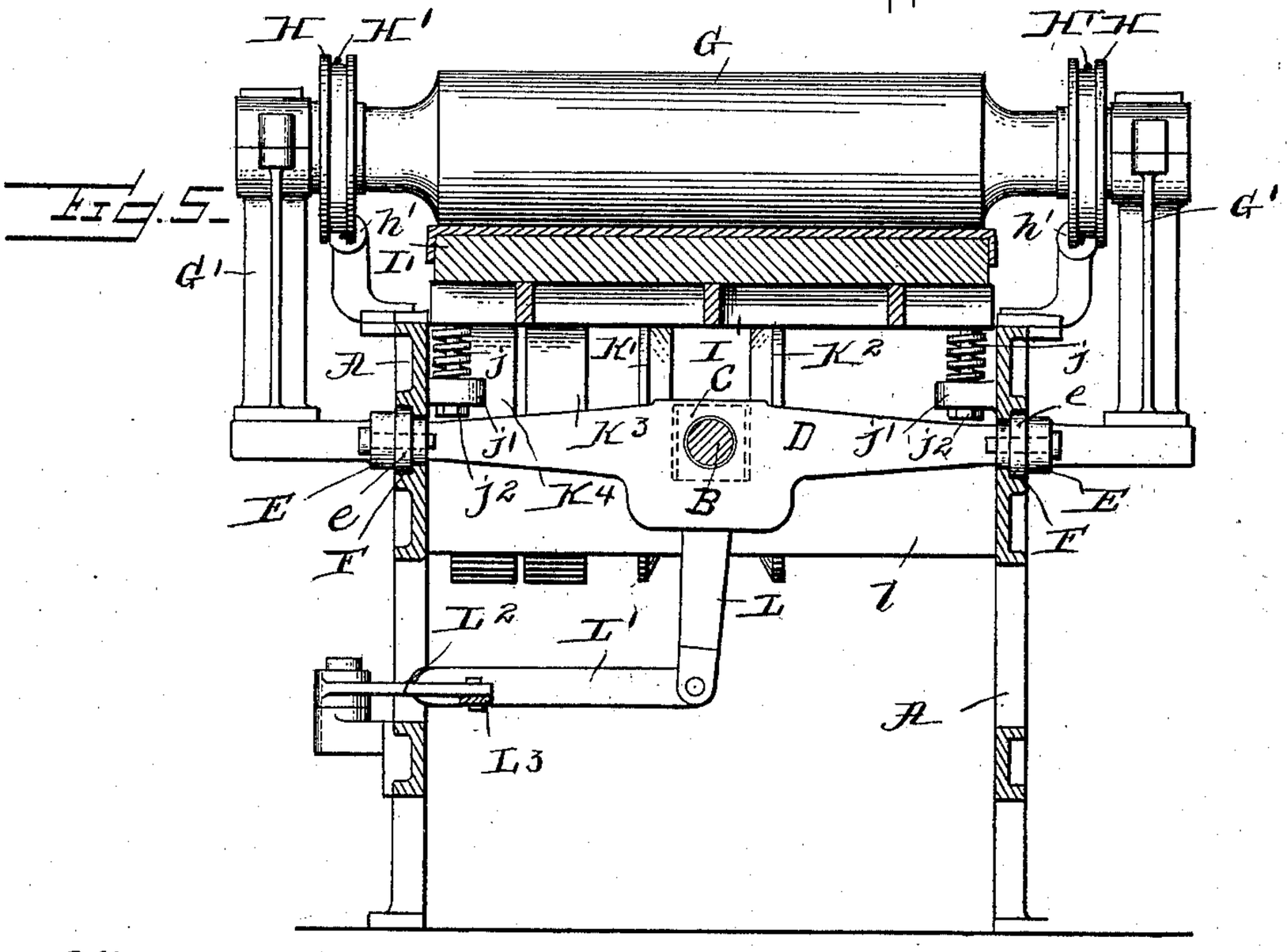


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM M. BARNES, OF PHILADELPHIA, PENNSYLVANIA.

IRONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 654,428, dated July 24, 1900.

Application filed November 23, 1899. Serial No. 737,982. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. BARNES, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Ironing-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 relates to ironing-machines, and has for its object to produce a machine wherein the ironing or finishing roller will travel in a straight line above a flat table, wherein the direction of travel of the roller may be reversed instantly without shifting the driving-belt, wherein the roller will be reversed automatically when it reaches the end of its travel in one direction and be brought to a stop automatically when it reaches the end of its travel in the opposite direction, and wherein the general construction and operation of the machine will be improved.

The invention consists in improved means for actuating the roller in a horizontal plane over a flat horizontally-disposed table, in improved means for manually and automatically controlling the direction of travel of the roller, in improved spring-bearings for the table, in improved mechanism for positively rotating the roller, and in various details of construction, all of which will be hereinafter described.

In the drawings, Figure 1 is a plan view. Fig. 2 is a side elevation. Fig. 3 is a rear end view. Figs. 4 and 5 are sections on lines 4 4 and 5 5 of Fig. 1.

A is the frame.

B is a screw-shaft journaled in the bearings *b* and *b'*, the latter bearing, at the rear of the machine, being a movable one and will be hereinafter more fully described.

C is a nut on the screw B.

D is a cross-head having a loose bearing for the nut C and extending toward and beyond each side of the machine. A carriage E is secured near the outer ends of the cross-head, which carriage has rollers *e* on tracks or guides F on the frame. At the outer ends of the cross-head are brackets G', supporting bearings for the ironing-roller G. Dependent upon the direction of rotation of the screw, the ironing or finishing roller and its supporting-frame, comprising parts D E *e* G', will travel either forward or backward.

H is a sheave, one at each end of the roller G.

H' is a cable one end of which is secured to a lug *h* on the front of the frame, while the other end is secured to a hooked tension-adjusting screw h^2, extending through a lug *h'* on the rear of the frame. A cable extends around each sheave, and thus by causing the roller to travel back and forth a positive movement of rotation is imparted to the finishing-roller. If desired, the finishing-roller may be rotated by friction alone.

I is the finishing-table-supporting frame, and I' the finishing-table supported thereupon. The table-frame is triangular in shape, the two rear corners being connected, through bolts *j*, with lugs *j'* on the frame, while compression-springs surround the bolt between the frame and the lugs. The bolts are also provided with nuts j^2 for adjusting the height of the frame. The front corner of the table-frame is connected, through a bolt j^3, with a lug j^4 on the frame, there being nuts j^5 for adjusting the height of the frame and a nut j^6 for adjusting independently a compression-spring j^{10}, which surrounds the bolt above the lug j^4. Thus means are provided for moving the table vertically toward or away from the finishing-roller and for adjusting the spring-pressure of the table.

I provide the following means for directly rotating the screw B in either direction: At the rear end of the screw-shaft is a beveled friction-gear K, and on the driving-shaft *k* are the beveled friction-gears K' and K^2. The driving-shaft rotates in bearings at the rear of the machine and has the driving-pulley K^3 and idle pulley K^4. The shaft *k* constantly revolves in one direction. If the rear end of the screw-shaft is moved sidewise to throw friction-gear K in contact with friction-gear K', the screw-shaft is rotated in the direction to carry the roller-frame forwardly, while if the shaft is moved to throw friction-gear K in contact with friction-gear K^2 the shaft is rotated in the other direction to carry the roller-frame rearwardly.

I provide the following means for manually controlling the direction of rotation of the screw-shaft and the consequent direction of travel of the finishing-roller:

L is a lever pivoted between its ends to the cross-bar *l*. Secured to its upper end is the movable bearing *b'*.

L' is a link connecting lower end of lever L with bell-crank L^2, pivoted on the frame of the machine.

L^3 is a link connecting bell-crank L^2 with lever L^4, secured to the controlling-shaft *m*. Secured to the shaft *m* are the treadle M and weighted lever M'. If the foot-treadle is depressed, the link L^3 is drawn forward and the link L' moved to throw the screw-shaft in the opposite direction and engaging friction-gears K and K', causing the screw to rotate in the direction to carry the finishing-roller frame toward the front. As soon as the pressure on foot-treadle is released the weighted lever acts to throw the screw-shaft to the other side, engaging friction-gears K and K^2 and causing the travel of the finishing-roller frame to be reversed. It will be understood from this description that so long as the operator maintains the foot-treadle depressed the finishing-roller will move forwardly. At any time that he releases the foot-treadle the weight will through the mechanism described cause the finishing-roller to move backwardly. If the operator neglects to release the foot-treadle, I provide the following means for automatically reversing the travel of the finishing-roller frame when it reaches its desired forward limit of travel:

N is a lever pivoted between its ends to a lug *n* on the machine-frame. The lower end of the lever is secured to the link L^3, while the free upper end is in line of travel of the yoke D. When in the forward movement of the finishing-roller frame (friction-gears K and K' being in gear, as described) the cross-head D strikes the lever N, the link L^3 is thrown backward, raising the treadle, on the one hand, (although the operator's foot may be upon it,) and, on the other hand, throwing the screw-shaft to the other side, engaging gears K and K^2 and immediately reversing the rotation of the screw and the direction of travel of the finishing-roller frame. The finishing-roller frame is automatically brought to a stop in its travel toward the rear of the machine in case it should not be manually reversed by the depression of the foot-treadle before reaching its extreme limit of travel by the following mechanism:

O is a pin on the cross-head.

P is a projection on the cross-bar *l* of the frame, and P' is a projection on the bearing *b'*, the side of projection P being in exact alinement with the side of pin O. When the finishing-roller frame is traveling backward, friction-gears K and K^2 are in engagement, as before described, and the space between the bases of the projections P and P' is slightly less than the width of the end of pin O, the difference being equal to half the extreme side motion of the movable bearing for the screw-shaft. When, therefore, the roller-frame has traveled back far enough to cause pin O to enter between the projections, the projection P' will be forced to one side, moving the screw-shaft sufficiently to disengage the friction-gears K and K^2, but not sufficiently to engage friction-gear K with friction-gear K'. When it is desired to start the roller-frame forward, the foot-treadle is depressed sufficiently to engage friction-gears K and K', as before described.

It will be understood that the sheave H may be of any desired size, and sheaves of different diameters are readily interchangeable to vary the speed of rotation of the roller. By varying the speed of rotation of the roller relatively to the speed of longitudinal travel of the roller I produce the finish desired. It will be understood that the roller may be heated in any desired manner.

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

1. In a finishing-machine, the combination, with the flat table and the supporting-frame therefor, of the finishing-roller, and a supporting-frame therefor, guides in the frame of the machine upon which said roller-frame is adapted to travel, and means for imparting to said roller a movement across, and in a plane parallel with the table, and a flexible driving means on the frame of the machine engaging said roller and imparting thereto a positive movement of rotation during the specified travel of the roller-supporting frame, substantially as described.

2. In a finishing-machine, the combination, with the flat table and the supporting-frame therefor, of the finishing-roller, and a supporting-frame therefor, guides in the frame of the machine upon which said roller-frame is adapted to travel, and means for imparting to said roller a movement across, and in a plane parallel with the table, a sheave on the roller-shaft, and a cable secured at its ends to the machine and passing around said sheave, thereby imparting to the roller a positive movement of rotation during the specified travel of the roller-supporting frame, substantially as described.

3. In a finishing-machine, the combination, with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, mechanism for imparting to said roller-frame a movement in opposite directions, reversing mechanism for changing the direction of travel of said roller-frame, a device in connection with said reversing mechanism and adapted to be actuated by the roller-frame when the latter reaches its desired limit of travel in one direction, thereby actuating said reversing mechanism to reverse the direction of travel of the roller-frame, and complementary devices connected to the roller-frame and the actuating mechanism therefor adapted to engage each other when the roller-frame reaches its desired limit of travel in the other direction and adapted when engaged to render said actu-

ating mechanism inoperative, substantially as described.

4. In a finishing-machine, the combination, with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, mechanism for imparting to said roller-frame a movement in opposite directions, manually-controlled reversing mechanism for changing the direction of travel of said roller-frame, a device in connection with said reversing mechanism and adapted to be actuated by the roller-frame when the latter reaches its desired limit of travel in one direction, thereby actuating said reversing mechanism to reverse the direction of travel of the roller-frame, and complementary devices connected to the roller-frame and the actuating mechanism therefor adapted to engage each other when the roller-frame reaches its desired limit of travel in the other direction and adapted when engaged to render said actuating mechanism inoperative, substantially as described.

5. In a finishing-machine, the combination, with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, a screw-shaft, a nut on said roller-supporting frame engaging said shaft, a laterally-movable bearing for one end of said shaft, the driving-shaft, and gearing between said driving-shaft and screw-shaft adapted to be engaged to drive the shaft in one direction when the bearing is moved to one side and in the other direction when the bearing is moved to the other side, substantially as described.

6. In a finishing-machine, the combination, with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, a screw-shaft, a nut on said roller-supporting frame engaging said shaft, a laterally-movable bearing for one end of said shaft, the driving-shaft, and gearing between said driving-shaft and screw-shaft adapted to be engaged to drive the shaft in one direction when the bearing is moved to one side and in the other direction when the bearing is moved to the other side, and manually-controlled reversing mechanism for moving said bearing from one side to the other, substantially as described.

7. In a finishing-machine, the combination, with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, a screw-shaft, a nut on said roller-supporting frame engaging said shaft, a laterally-movable bearing for one end of said shaft, the driving-shaft and gearing between said driving-shaft and screw-shaft adapted to be engaged to drive the shaft in one direction when the bearing is moved to one side and in the other direction when the bearing is moved to the other side, reversing mechanism for moving said bearing from one side to the other, and a device in connection with said reversing mechanism and adapted to be actuated by the roller-frame when the latter reaches its desired limit of travel in one direction, thereby actuating said reversing mechanism to move said bearing from one side to the other, substantially as described.

8. In a finishing-machine, the combination, with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, a screw-shaft, a nut on said roller-supporting frame engaging said shaft, a laterally-movable bearing for one end of said shaft, the driving-shaft and gearing between said driving-shaft and screw-shaft adapted to be engaged to drive the shaft in one direction when the bearing is moved to one side and in the other direction when the bearing is moved to the other side, manually-controlled reversing mechanism for moving said bearing from one side to the other, and a device in connection with said reversing mechanism and adapted to be actuated by the roller-frame when the latter reaches its desired limit of travel in one direction thereby actuating said reversing mechanism to move said bearing from one side to the other, substantially as described.

9. In a finishing-machine, the combination, with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, a screw-shaft, a nut on said roller-supporting frame engaging said shaft, a laterally-movable bearing for one end of said shaft, the driving-shaft and gearing between said driving-shaft and screw-shaft adapted to be engaged to drive the shaft in one direction when the bearing is moved to one side and in the other direction when the bearing is moved to the other side, and complementary devices connected to the roller-frame and the screw-shaft respectively adapted to engage each other when the roller-frame reaches its desired limit of travel in one direction and adapted when engaged to move said screw-shaft to the center and throw said gears out of engagement, substantially as described.

10. In a finishing-machine, the combination, with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, a screw-shaft, a nut on said roller-supporting frame engaging said shaft, a laterally-movable bearing for one end of said shaft, the driving-shaft and gearing between said driving-shaft and screw-shaft adapted to be engaged to drive the shaft in one direction when the bearing is moved to one side and in the other direction when the bearing is moved to the other side, manually-controlled reversing mechanism for moving said bearing from one side to the other, a device in connection with said reversing mechanism and adapted to be actuated by the roller-frame when the latter reaches its desired limit of travel in one direction, thereby actuating said reversing mechanism to move said bearing from one side to the other, and complementary devices connected to the roller-frame and the screw-shaft respectively adapted to engage each other when the roller-

frame reaches its desired limit of travel in the other direction and adapted when engaged to move said screw-shaft to the center and throw said gears out of engagement, substantially as described.

11. In a finishing-machine, the combination with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, a screw-shaft, a nut on said roller-supporting frame engaging said shaft, a laterally-movable bearing for one end of said shaft, a driving-shaft, beveled friction-gears thereon, a beveled friction-gear on said screw-shaft between the driving-shaft gears, and adapted to engage one or the other of the driving-shaft gears by moving said bearing and shaft to one side or the other, and manually-controlled reversing mechanism connected with said bearing, substantially as described.

12. In a finishing-machine, the combination with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, a screw-shaft, a nut on said roller-supporting frame engaging said shaft, a laterally-movable bearing for one end of said shaft, a driving-shaft, beveled friction-gears thereon, a beveled friction-gear on said screw-shaft between the driving-shaft gears, and adapted to engage one or the other of the driving-shaft gears by moving said bearing and shaft to one side or the other, and manually-controlled reversing mechanism connected with said bearing, a device in connection with said reversing mechanism and adapted to be actuated by the roller-frame at its desired limit of travel in one direction, thereby actuating said reversing mechanism to move said screw-shaft gear out of engagement with one of said driving-shaft gears and into engagement with the other.

13. In a finishing-machine, the combination with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, a screw-shaft, a nut on said roller-supporting frame engaging said shaft, a laterally-movable bearing for one end of said shaft, a driving-shaft, beveled friction-gears on said driving-shaft, a beveled friction-gear on said screw-shaft between the driving-shaft gears, and adapted to engage one or the other of the driving-shaft gears by moving said bearing and shaft to one side or the other, and manually-controlled reversing mechanism connected with said bearing, and devices connected to said roller-frame and screw-shaft respectively adapted to engage each other at the desired limit of travel of the roller-frame in one direction, thereby moving said screw-shaft gear to its central position out of engagement with both of said driving-shaft gears.

14. In a finishing-machine, the combination with the table-supporting frame, of the finishing-roller and a traveling supporting-frame therefor, a screw-shaft, a nut on said roller-supporting frame engaging said shaft, a laterally-movable bearing for one end of said shaft, a driving-shaft, beveled friction-gears on said driving-shaft, a beveled friction-gear on said screw-shaft between the driving-shaft gears, and adapted to engage one or the other of the driving-shaft gears by moving said bearing and shaft to one side or the other, and manually-controlled reversing mechanism connected with said bearing, a lever connected to said reversing mechanism at one end, pivoted intermediately, and in line of travel of the roller-frame, whereby said roller-frame engages said lever at the desired limit of travel in one direction and moves it to actuate said reversing mechanism, substantially as described.

15. In a finishing-machine, the combination with the table-supporting frame, of the finishing-roller, a supporting-frame therefor, guides for said roller-frame on the frame of the machine, a screw-shaft, a nut on said roller-supporting frame engaging said screw-shaft, a laterally-movable bearing for one end of said shaft, a driving-shaft, beveled friction-gears on said driving-shaft, a beveled friction-gear on said screw-shaft between the driving-gears and adapted to engage one or the other of the driving-shaft gears by moving said bearing and shaft to one side or the other, an intermediately-pivoted lever, upholding said bearing, a link connected thereto, a bell-crank connected to said link, a control-shaft, a lever connected thereto, a link connecting said lever and bell-crank, a treadle on said control-shaft and a weighted lever also on said control-shaft, and tending to uplift said treadle, substantially as described.

16. In a finishing-machine, the combination, with the table-supporting frame, of the finishing-roller, a supporting-frame therefor, guides for said roller-frame on the frame of the machine, a screw-shaft, a nut on said roller-supporting frame engaging said screw-shaft, a laterally-movable bearing for one end of said shaft, a driving-shaft, beveled friction-gears on said driving-shaft, a beveled friction-gear on said screw-shaft between the driving-gears and adapted to engage one or the other of the driving-shaft gears by moving said bearing and shaft to one side or the other, manually-controlled reversing mechanism connected to said bearing, a lever connected to said reversing mechanism at one end, pivoted intermediately, and in line of travel of the roller-frame, whereby said roller-frame engages said lever at the desired limit of travel in one direction and moves it to actuate said reversing mechanism, substantially as described.

17. In a finishing-machine, the combination with the table-supporting frame, of the

finishing-roller, a supporting-frame therefor, guides for said roller-frame on the frame of the machine, a screw-shaft, a nut on said roller-supporting frame engaging said screw-shaft, a laterally-movable bearing for one end of said shaft, a driving-shaft, beveled friction-gears on said driving-shaft, a beveled friction-gear on said screw-shaft between the driving-gears and adapted to engage one or the other of the driving-shaft gears by moving said bearing and shaft to one side or the other, a pin carried by the roller-frame, a projection on the frame of the machine one side of which is in alinement with one side of said pin, and a projection on said bearing in proximity to the first-named projection and closer thereto, when the screw-shaft beveled gear is engaged with one of said driving-shaft beveled gears, than the width of the pin, whereby when the roller-frame reaches its desired limit of travel in one direction, said pin enters between said projections and forces said screw-shaft beveled gear out of engagement with the said driving-shaft beveled gear, substantially as described.

18. In a finishing-machine, the combination, with the screw-shaft supported on the frame of the machine, a nut engaging the screw-shaft, a cross-head containing said nut and extending across the machine, guides on the frame of the machine, a carriage on each side of the machine connected to said cross-head, said carriages being provided with rollers adapted to travel on said guides, brackets connected to said cross-head, a finishing-roller journaled in bearings on said brackets, a table-supporting frame on the frame of the machine extending substantially parallel with said guides, and means to rotate said screw-shaft in opposite directions, substantially as described.

19. In a finishing-machine, the combination, with the screw-shaft supported on the frame of the machine, a nut engaging the screw-shaft, a cross-head containing said nut and extending across the machine, guides on the frame of the machine, a carriage on each side of the machine connected to said cross-head, said carriages being provided with rollers adapted to travel on said guides, brackets connected to said cross-head, a finishing-roller journaled in bearings on said brackets, a spring-supported table-supporting frame on the frame of the machine, means for adjusting the height of the table-frame and the tension of the springs, and means to rotate said screw-shaft in opposite directions, substantially as described.

20. In a finishing-machine, the combination with the finishing-roller, a traveling frame upholding said roller, means to move said frame in opposite directions in a horizontal plane, a triangular-shaped table-frame having two spring-supported corners at the sides and one end of the machine-frame, and a spring-supported corner at the other end of, and centrally between the sides of, said machine-frame, and means for adjusting the height of the table-frame and the tension of the springs, substantially as described.

21. In a finishing-machine, the combination, with the screw-shaft supported on the frame of the machine, a nut engaging the screw, a cross-head containing said nut and extending across the machine, guides on the frame of the machine, a carriage on each side of the machine connected to said cross-head, said carriages being provided with rollers adapted to travel on said guides, brackets connected to said cross-head, a finishing-roller journaled in bearings on said brackets, a triangular-shaped table-frame having two spring-supported corners at the sides and one end of the machine-frame, and a spring-supported corner at the other end of, and centrally between the sides of, said machine-frame, means for adjusting the height of the table-frame and the tension of the springs, and means to rotate said screw-shaft in opposite directions, substantially as described.

22. In a finishing-machine, the combination with the table-supporting frame, the finishing-roller, and a supporting-frame therefor, actuating mechanism for imparting to said roller-frame a movement in opposite directions, reversing mechanism connected with said actuating mechanism, for changing the direction of travel of the roller-frame, a treadle connected to the reversing mechanism which when depressed will move said reversing mechanism to cause the roller-frame to travel in one direction and which when raised will move said reversing mechanism to reverse the travel of the roller-frame, a device in connection with said reversing mechanism and adapted to be actuated by the roller-frame when the latter reaches its desired limit of travel in the first-named direction, thereby actuating said reversing mechanism to reverse the direction of travel of the roller-frame and raise said treadle, and complementary devices connected to the roller-frame and the actuating mechanism therefor adapted to engage each other when the roller-frame reaches its desired limit of travel in the other direction and adapted when engaged to render said actuating mechanism inoperative.

In testimony of which invention I have hereunto set my hand, at Philadelphia, Pennsylvania, on this 20th day of November, 1899.

WILLIAM M. BARNES.

Witnesses:
JESSE B. HELLER,
J. M. SHINDLER, Jr.