

(No Model.)

4 Sheets—Sheet 1.

F. FOELLMER.
MOTOR.

No. 359,858.

Patented Mar. 22, 1887.

Fig. 1.

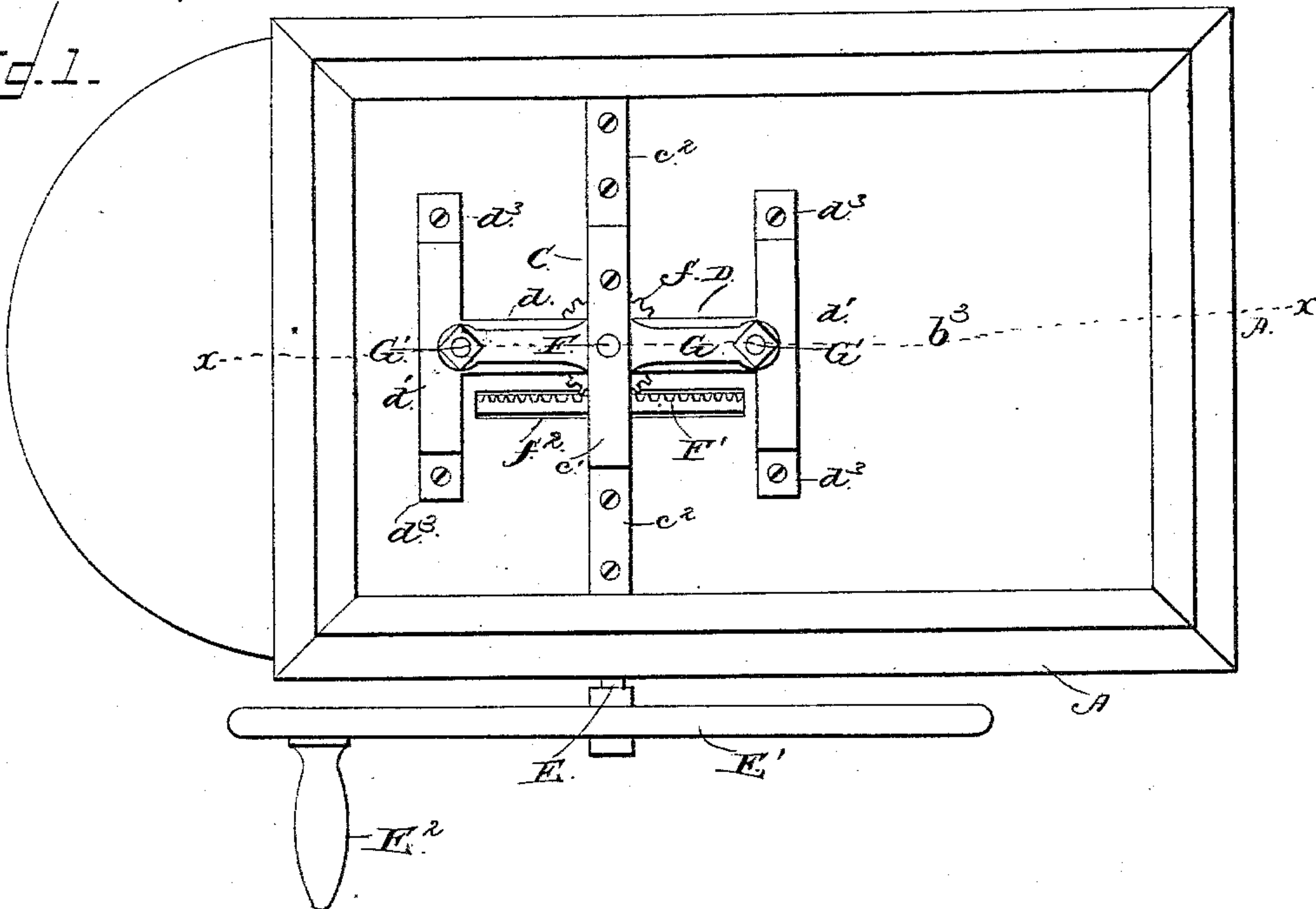
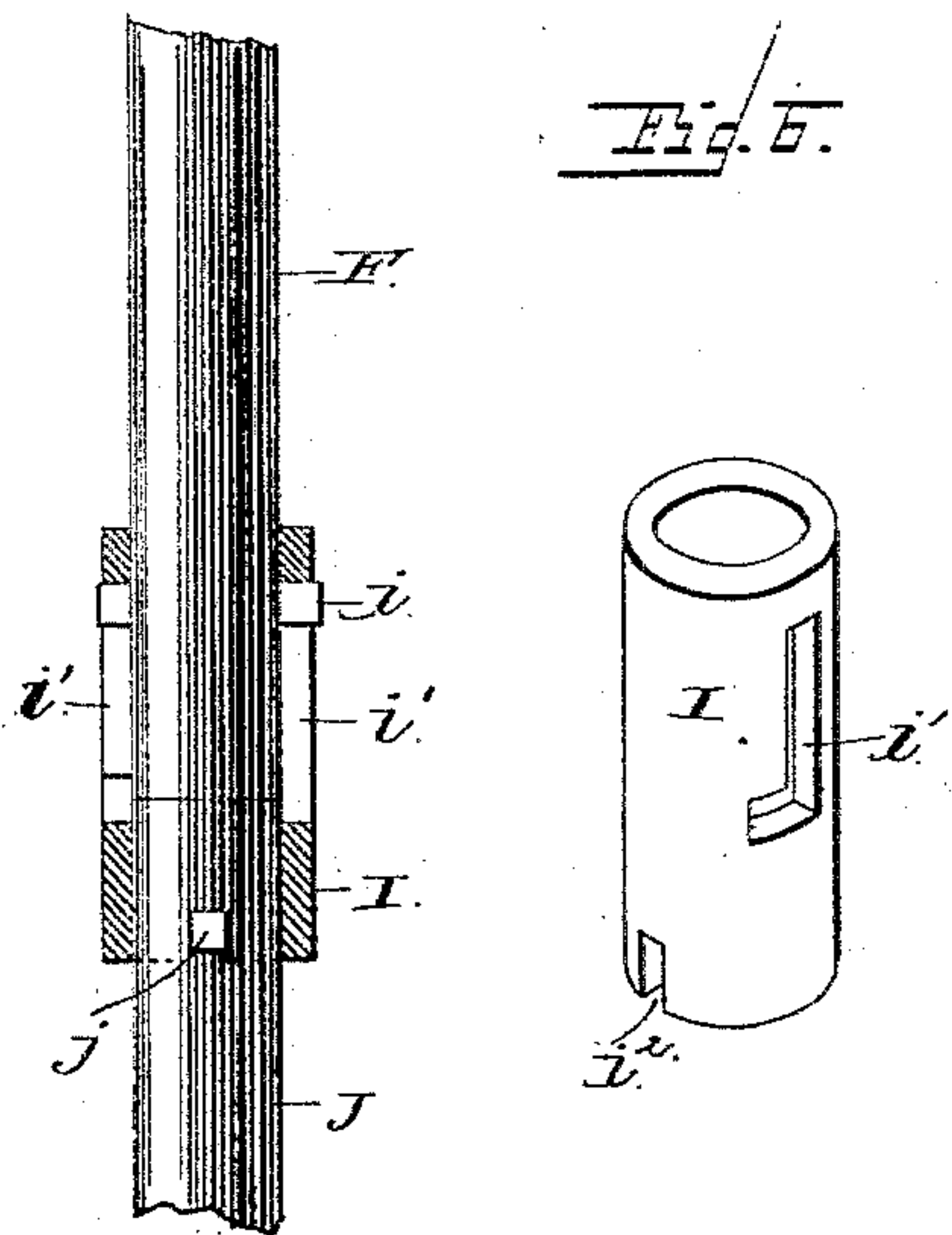


Fig. 6.



Witnesses
M. C. Fowler
W. Percher

Inventor
Fritz Foellmer
By his Attorneys
C. A. Howland

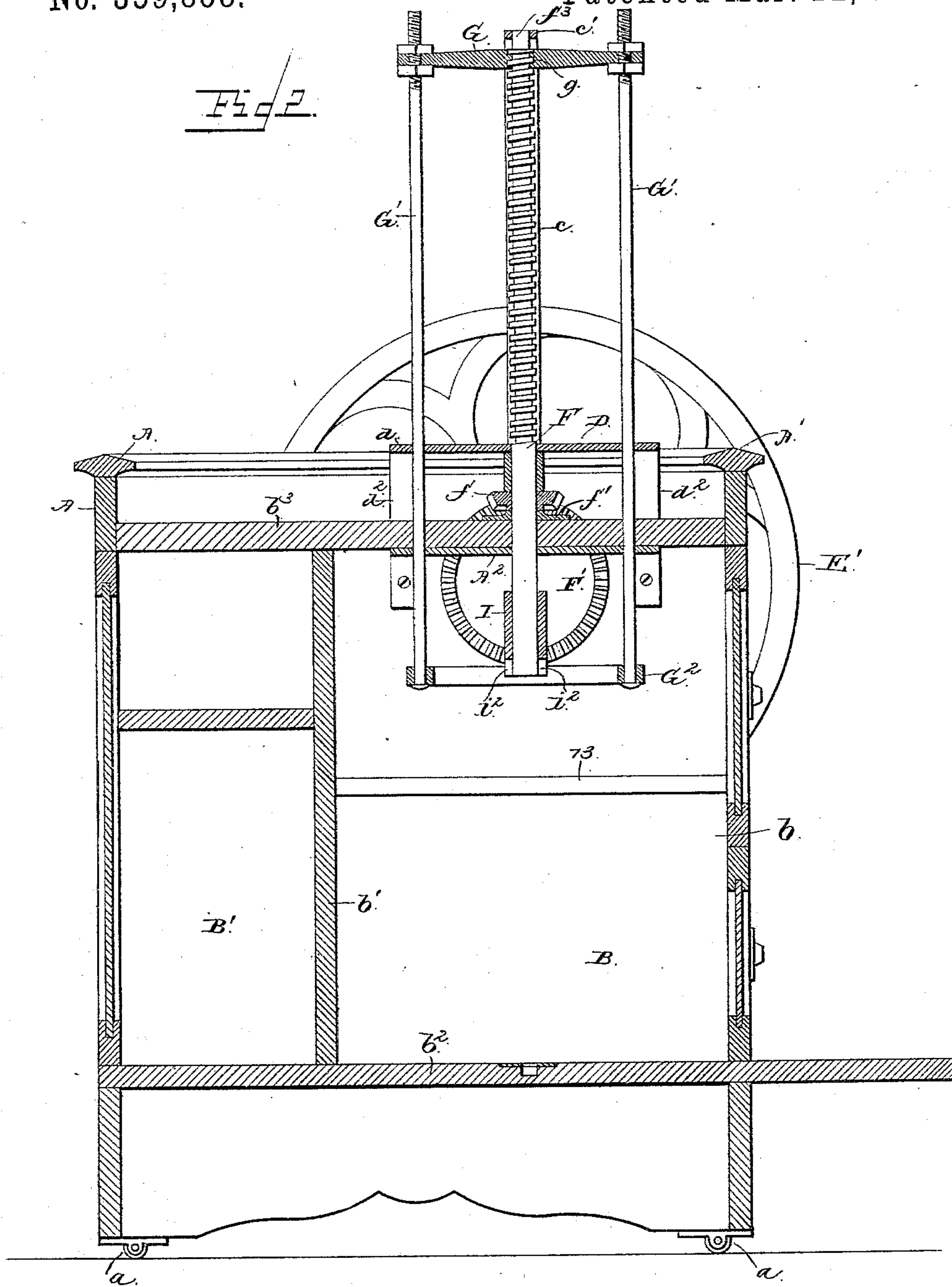
(No Model.)

4 Sheets—Sheet 2.

F. FOELLMER.
MOTOR.

No. 359,858.

Patented Mar. 22, 1887.



Witnesses
M. E. Fowler
H. Peruch

Inventor
Fritz Foellmer
By his Attorneys
C. A. Snow & Co

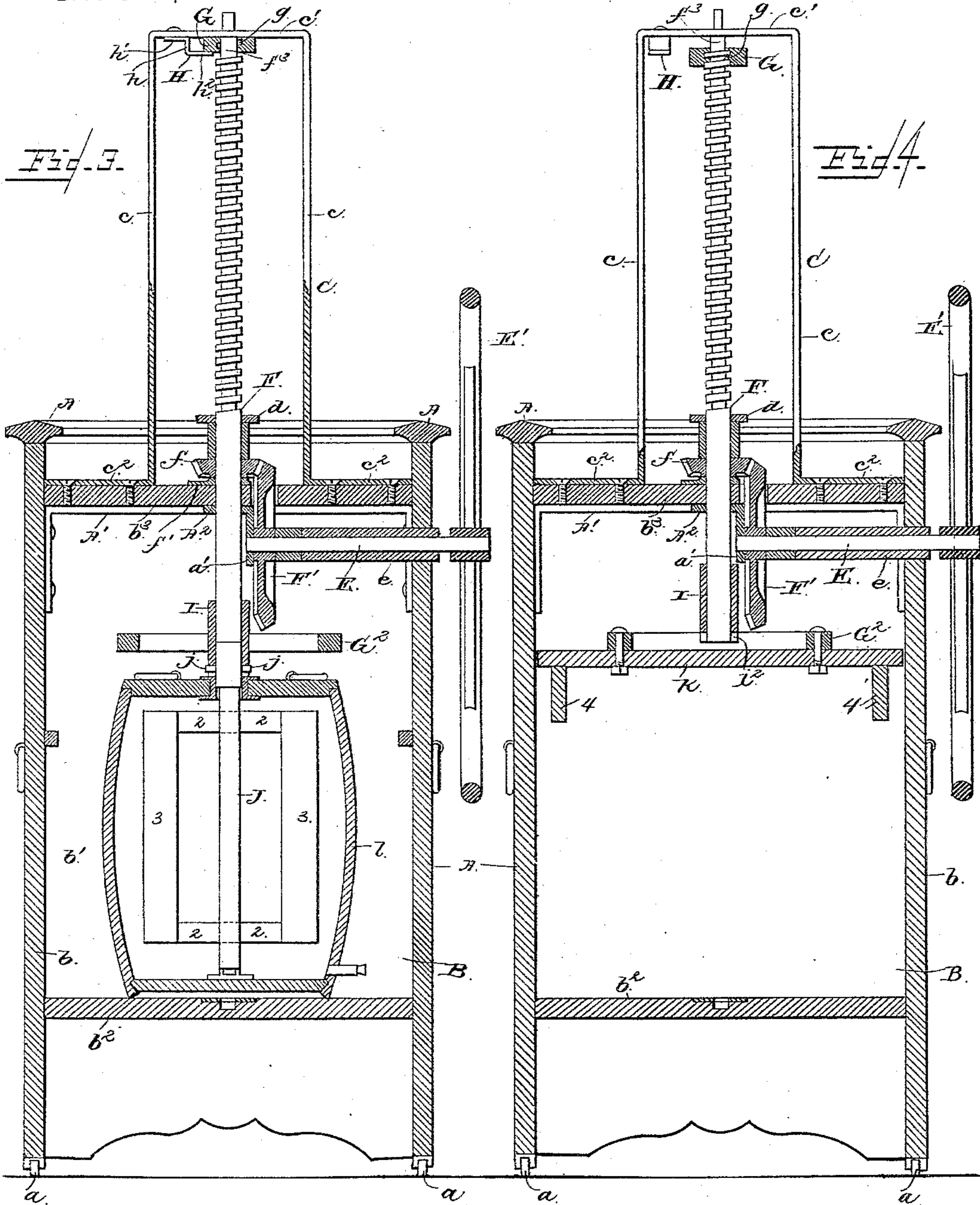
(No Model.)

4 Sheets—Sheet 3.

F. FOELLMER.
MOTOR.

No. 359,858.

Patented Mar. 22, 1887.



Witnesses
M. E. Fowler
H. W. Pruckner

Inventor
Fritz Foellmer
By his Attorneys
C. A. Snowdell

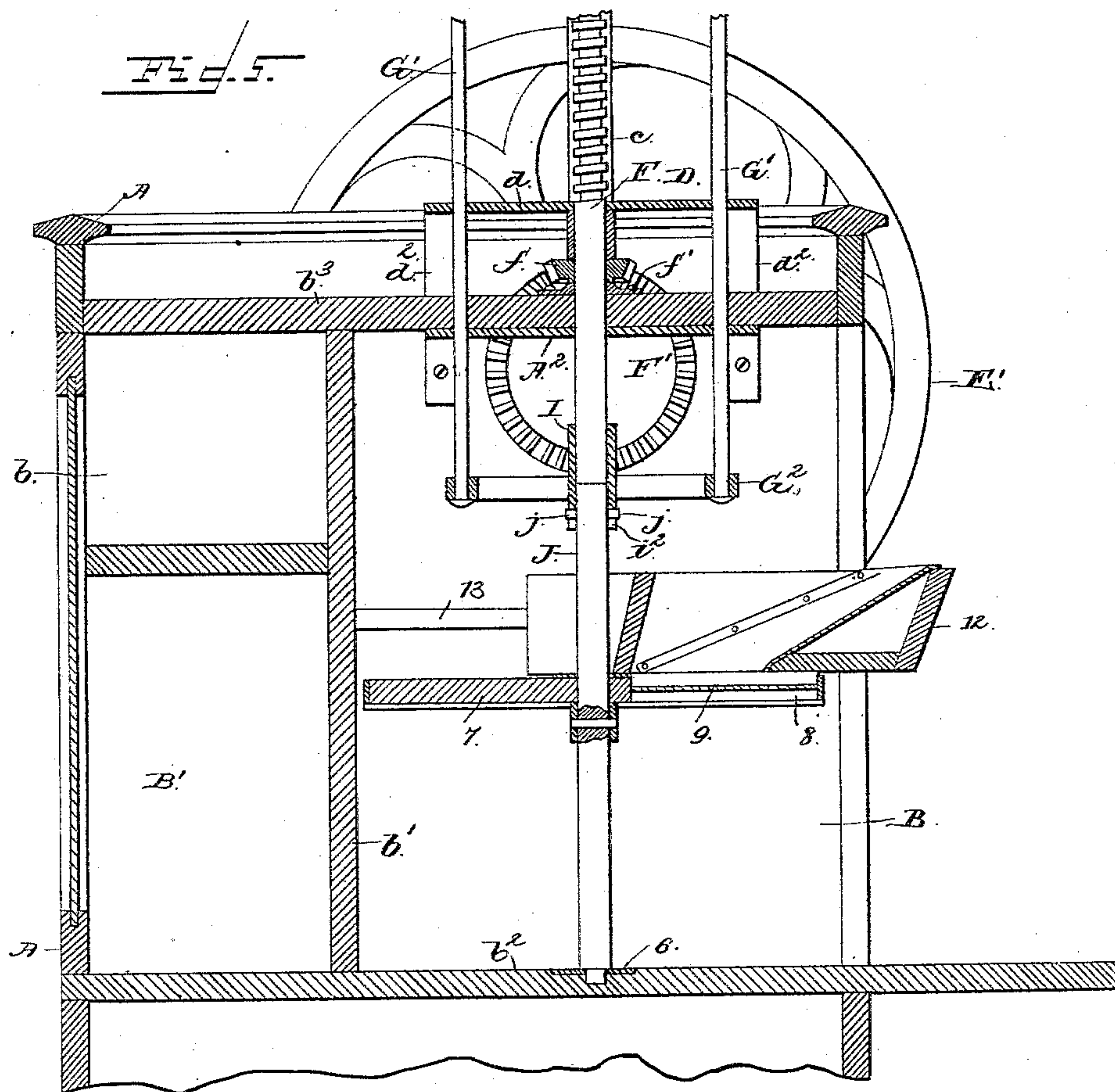
(No Model.)

4 Sheets—Sheet 4.

F. FOELLMER.
MOTOR.

No. 359,858.

Patented Mar. 22, 1887.



Witnesses
M. S. Gouley
H. Berahap

Inventor
Fritz Foellmer

By his Attorneys

C. A. Snowdon

UNITED STATES PATENT OFFICE.

FRITZ FOELLMER, OF WEST POINT, NEBRASKA.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 359,858, dated March 22, 1887.

Application filed July 30, 1886. Serial No. 209,565. (No model.)

To all whom it may concern:

Be it known that I, FRITZ FOELLMER, a citizen of the United States, residing at West Point, in the county of Cuming and State of Nebraska, have invented a new and useful Improvement in Gearing for Operating Churns, Vegetable Cutters and Graters, and Presses, of which the following is a specification.

My invention relates to improvements in motors for operating churns, presses, &c.; and it consists of the peculiar combination and novel construction and arrangement of the various parts for service, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

The object of my invention is to provide improved means which can be easily and rapidly adjusted to impart rotary motion to a churn-dasher or vegetable cutter or grater, or to be capable of longitudinal movement, and carrying followers of different classes to convert the apparatus into a press for manufacturing wine, vinegar, or compressing cotton or other substances.

In the drawings hereto annexed, which illustrate an improved motor of the class described embodying my invention, Figure 1 is a top plan view. Fig. 2 is a vertical central sectional view of the same on the line $x x$ of Fig. 1. Fig. 3 is a transverse sectional view of the apparatus adapted to rotate or drive a churn-dasher. Fig. 4 is a sectional view corresponding to Fig. 3, showing the apparatus adapted as a press. Fig. 5 is another sectional view showing the apparatus adjusted for slicing cabbage and other large vegetables. Fig. 6 is an enlarged detail sectional view of the locking or coupling sleeve, together with a portion of the feed-shaft and the shaft to be driven thereby.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the supporting-frame or inclosing-casing of my invention, which is mounted upon suitable rollers or casters, a , that are suitably affixed to the corners or angles of the frame or casing, so that the latter can be very conveniently and easily moved from one place to another, and comprises the side walls, b , a vertical partition, b' , at or near the middle of the side walls, which divide the casing into two chambers or com-

partments, B B', the former of which is adapted to contain the various receptacles or vessels in which the work is performed, while the latter is designed to store away the various devices very compactly when they are not in use. The casing has the usual bottom, b^2 , and the top or roof b^3 , and on this top b^3 are mounted the supporting or carrying frames for the gearing, which I will now proceed to describe.

The frame C consists of the uprights or vertical portions c and the cross-bar c' , connecting the vertical portions at their upper ends, the said uprights having angular feet c^2 at their lower ends, which bear on the top of the casing or frame A, and are provided with openings, through which are passed screws, or the like, to firmly and rigidly secure the frame C to the casing or frame A, as shown.

D designates another frame, which consists of a horizontal bar or support, d , having the right-angled lugs or cross-heads d' at its ends, and the vertically-disposed legs d^2 at the outer ends of the cross-heads, and provided with the feet d^3 , through which are passed the screws to secure the legs to the top of the frame or casing A. This frame D is made or bent from a single piece of metal, and the frame C is also formed in a single piece of metal, thereby rendering the frames very strong and durable, and for the purpose of better distinguishing the frames C and D hereinafter I will term the frame C the "vertical frame" and the frame D the "horizontal frame."

The side and top walls of the inclosing case or frame A are strengthened by means of brace-straps A' , which are suitably secured to the insides of the same, so that they are concealed from view, and these brace-straps are arranged across from one side to the other of the compartment B, and are connected at their middle by a cross-bar, A^2 , which carries a hanger or depending bearing, a' , which is arranged at or near the middle of the said tie or connecting bar.

E designates a driving-shaft, which is arranged in horizontal position, and the inner end of this shaft is journaled in the hanger or depending bearing a' of the brace-straps, while the outer end of the said driving-shaft extends or projects through one of the side walls of the inclosing case or frame, and is journaled in a suitable bearing, e , that is rigidly affixed

to the said casing, as shown. The outer end of this shaft carries a large balance-wheel, E' , which serves to render the rotations of the driving-shaft very steady, and to this balance-wheel is secured the handle E^2 , which is to be grasped by hand and turned in order to rotate the balance-wheel and the driving-shaft, as is obvious.

F designates a vertical feed-shaft, which is arranged at right angles to the driving-shaft and actuated thereby. The upper end of this vertical feed-shaft is fitted or journaled in a suitable opening or bearing in the transverse connecting-bar of the vertical frame C , and the lower end of this feed-shaft passes through a suitable opening or bearing in the bar d of the horizontal frame D , the extreme lower end of the said shaft being extended through the top or roof of the inclosing-casing A for some distance, so that it projects in the compartment B . This feed-shaft F carries a small bevel gear-wheel or pinion, f , near its lower end, which pinion is fitted rigidly on the shaft to rotate therewith and arranged beneath the bar d of the horizontal frame D , and above a bearing or wear plate, f' , that is suitably secured on the top or roof of the inclosing-casing, so that the pinion is prevented from coming in contact with the said roof and wearing it away or defacing it.

The small pinion f of the feed-shaft meshes with and is rotated by a larger bevel gear-wheel, F' , that is rigidly affixed to the inner end of the horizontal driving-shaft E , so that when the driving-shaft is rotated the motion thereof will be communicated to the feed-shaft by the bevel gear-wheels F' and f , the larger bevel gear-wheel revolving or working in a vertical slot, f^2 , which is cut or formed in the inclosing-casing A .

The feed-shaft is capable of horizontal rotation only, and is prevented from longitudinal movement or play by being stepped or journaled in the frames C D and by the bevel-pinion thereon; and this shaft is provided with exterior screw-threads, as shown, for a purpose to be explained hereinafter. The extreme upper end of the feed-shaft is left smooth or plane, as at f^3 , which is of reduced diameter as compared with the diameter of the shaft at the threaded portion thereof, and on this shaft is fitted a cross head or plate, G , which is provided at its middle or center with a transverse interiorly screw-threaded opening, g , the threads of which are adapted to be engaged with the threads on the feed-shaft, so that when the latter is rotated the said cross-head will be caused to travel in vertical lines either up or down on the shaft, according to the direction in which the latter is rotated or driven. This cross-head can thus be adjusted vertically to any desired elevation by rotating the feed-shaft, and it is only employed when the apparatus is adapted for compressing different articles or substances. To the outer ends of this adjustable cross-head are rigidly secured guide-rods G' , which are disposed in vertical lines

and pass through suitable openings in the cross-bar d of the horizontal frame and in the top of the case A , and the lower ends of these guide-rods are connected together by a plate, disk, ring, or other suitable device or connecting-piece, G^2 , which is secured thereto by nuts or the like.

The guide-rods and the connecting-piece G^2 are capable of vertical adjustment with the cross-head when the feed-shaft is rotated, and when the apparatus is to be used as a motor for churn-dashers or vegetable cutters and graters, as hereinafter explained, the cross-head is adjusted to the top of the feed-shaft, so that the opening therein encompasses the plane or smooth portion of the shaft, and it is held in such elevated position by a locking device, H , of suitable construction. For the purpose of simplicity and cheapness, I preferably employ a locking device which comprises a vertical arm, h , and two horizontal arms, h' h^2 , which are arranged at opposite ends and on opposite sides of the vertical arms, the arm h' being pivotally connected with the connecting or transverse bar of the vertical frame, and the arm h^2 is adapted to take under the cross-head G and hold it and the guide-rods in an elevated position, so that they cannot be affected or adjusted by the rotation of the feed-shaft.

To the lower end of the feed-shaft is rigidly affixed a headed stop-pin, i , which passes through a bayonet-slot, i' , of an adjustable coupling or locking sleeve, I , that is fitted loosely on the lower end of the feed-shaft for the purpose of detachably connecting the shafts of different classes or forms of implements to be operated by the feed-shaft. The short shaft J of the churn-dasher, potato grater or crusher is provided with transverse pins or studs j , and it is adapted to fit up into the sleeve I of the feed-shaft; and the said sleeve I is provided in its lower edges with notches or recesses i^2 , into which the studs or pins of the short vertical shaft J of the device to be actuated or driven is fitted, so that when the feed-shaft is rotated the sleeve and the short shaft of the device will be correspondingly driven with the feed-shaft, as will be very readily understood.

It will be understood that the coupling-sleeve I is permanently retained on the feed-shaft at all times, and that the supplemental shaft J can be detached from the feed-shaft without removing the coupling from the latter.

The operation of this part of my invention will be very readily understood. When the device is to be used for rotating the short shafts J of the churn-dasher or vegetable cutter or grater, the sleeve I is adjusted so that the upper end of the short shaft J fits into the same and the pins or studs thereon enter the notches in the sleeve. The cross-head G having been adjusted so that it is at the top of the feed-shaft and will not be affected by the rotation thereof, as heretofore described, the crank-handle is rotated to drive the balance-wheel

and the horizontal driving-shaft. The motion of the latter, being communicated to the feed-shaft by the bevel gear-wheels, also rotates the feed-shaft and the short shaft J to revolve the churn, the knives of the vegetable cutter or grater, or any other device which may be connected thereto. When the apparatus is to be used as a press to compress fruits, cotton, &c., the locking device H is turned away from the cross-head to release the latter, and a suitable follower or other device, K, is connected with the connecting-piece G² by means of bolts and nuts or other suitable appliances, and a suitable vessel or receptacle is placed beneath the follower, with the substance to be operated upon. The crank is now rotated to drive the driving-shaft, and the latter rotates the feed-shaft, which acts upon the follower to move the latter and the devices connected therewith vertically, so that they will descend to act upon the work and compress the latter to the required extent, after which the operation is reversed, to elevate the follower, the guide-rods, and the cross-head. It will be understood that the cross-head is not rotated by the action thereon of the threaded feed-shaft, but that it merely moves in a vertical line, as the guide-rods, or "plunger-rods," as they may be termed, effectually prevent any rotation of the same.

It will be seen from the foregoing description, taken in connection with the drawings, that I provide an improved apparatus which can be easily and rapidly adapted or converted to drive the rotary shaft of a churn-dasher or vegetable cutter or grater, or that it can be adapted for service as a press to compress cotton or any other substance, as may be desired.

I will now proceed to describe the various forms of devices which I have shown herein, and to which my invention is adapted to be adjusted to operate the same.

In Fig. 3 of the drawings I have shown a churn vessel or body, 1, placed in the compartment B of the inclosing-case A and resting on the bottom thereof, and in this vessel or body the short shaft J is stepped at its lower end in a suitable bearing in the body 1, and the said shaft carries at its upper and lower ends outwardly-extending arms 2, to the extremities of which are rigidly affixed the vertical dasher-blades 3, which are secured in any suitable manner to the said arms, as will be readily understood. When the feed-shaft and the short shaft J are rotated by the driving-shaft, the arms and blades 2 3 of the dasher are likewise rotated, to agitate the cream in the body 1, and thus effect the churning thereof in a very short time.

In Fig. 4 of the drawings the device is shown adapted for use as a press, and in this connection the cross-head is forced or adjusted vertically by the feed-shaft to move the plunger or guide rods and the follower K, affixed thereto, in like manner, so that the material will be compressed. In the form of the device shown in the said figure, the follower is affixed

to the connecting-piece G² by means of bolts, so that it can be very easily detached; and the said follower is provided with vertical flanges 4, so that it is adapted for compressing cotton, &c., this form of device being especially adapted for this purpose.

The apparatus shown in Fig. 5 is especially adapted for slicing cabbage in the manufacture of sauer-krant, although it can be used for other purposes. The short shaft J is connected to the feed-shaft by the coupling-sleeve in the manner heretofore described, and is stepped in a suitable bearing, 6, affixed to the bottom of the case A. This shaft J carries a large cutter-disk, 7, which is suitably affixed to the same, so that it will rotate therewith, and this cutter-disk has a series of radial slots, 8, one of the sides of each of which is inclined or beveled, as shown. Against this inclined side of each of the radial slots 8 is affixed a cutter-blade, 9, one edge of the blade being projected beyond the upper face of the disk, so that it is in condition to cut or slice the cabbage or other vegetable that is fed thereto from a feed table or box, 12, which is detachably supported on the sides of the compartment B by means of suitable cleats, 13, that are affixed to the said sides and enter suitable grooves in the sides of this table or feed-box. The feed box or table is inclined, as shown, and the vegetable is fed along this inclined portion to the rotary cutter by hand; and as the driving and feed shafts are rotated the cutter is revolved to successively bring its blades into position to act upon the vegetable fed thereto, as is obvious. The short shaft J and its cutter can be easily and readily disconnected from the feed-shaft by properly adjusting the coupling-sleeve I, and the feed table or box can likewise be detached from the case or frame A by sliding it along the cleats or ways, thus adapting the other devices to be connected with the feed-shaft to be operated thereby.

I do not lay any claim to the cutter-disk or the feed box or table shown in Fig. 5, as such features are old.

Various slight changes in the form and proportion of parts and details of construction can be made without departing from the spirit or sacrificing the advantages of my invention.

The motor herein described can be used for other purposes than those herein stated. I have employed it to advantage in slicing and grating potatoes, pressing apples for cider, and other uses where a combined rotary and vertical movement can be utilized. In slicing and grating potatoes, the parts are arranged in the position shown in Fig. 5; but a different form of slicing means is employed to suit the circumstances.

I do not deem it necessary to show herein all of the appliances with which my motor can be used. It is sufficient to say that whenever a vertical pressure is desired the plunger-rods or plunger proper is connected to a suitable follower, employed either to press hay, cider or

wine, sausage meat, or the like; and when a rotary movement can be utilized the part to be operated is connected to the feed-shaft.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A motor comprising a rotatable feed-shaft, a plunger adapted to be moved vertically, and locking means for holding the plunger against vertical movement when desired, whereby the motor can be utilized to convey rotary motion or vertical pressure, as set forth.

2. A motor comprising a threaded feed-shaft, a cross head fitted and adjustable vertically thereon, the plunger-rods connected to the cross-head and adapted to carry a follower, and a locking device or catch for holding the cross-head against movement on the feed-shaft, as and for the purpose set forth.

3. A motor comprising a suitable case or frame, the vertical and horizontal frames C D, secured thereto, a driving-shaft, a vertical threaded feed shaft journaled in the frame and geared to the driving-shaft, a follower fitted on the feed-shaft, a locking device pivoted to the vertical frames and adapted to be connected with the cross-head, to prevent vertical play of the latter, and the plunger-rods connected to the cross-head and having a connecting-piece at their lower ends adapted to carry a follower, as and for the purpose described.

4. The combination of a rotary shaft, a short

shaft, as J, adapted to carry a device to be actuated by the rotary shaft, and a sliding sleeve permanently fitted on the rotary shaft and having a slotted connection therewith, whereby the sleeve is capable of an endwise movement on the rotary shaft and is adapted to be coupled to the short shaft to rotate the same, as and for the purpose set forth.

5. The combination of a rotary shaft, a coupling sleeve fitted permanently on the lower end thereof and having a slot and notches, as shown, a pin passing through the slot of the sleeve to connect it to the rotary shaft, and a shortshaft, J, having the studs or pins adapted to be fitted in the notches in the lower edges of the coupling-sleeve, as and for the purpose described.

6. A motor comprising a feed-shaft capable of rotary motion, a plunger adapted to be moved vertically, locking means for holding the plunger from movement when desired, a follower carried by the plunger, and a sliding coupling, I, permanently connected to the feed-shaft and having a slotted connection therewith, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

FRITZ ^{his} + FOELLMER.
mark

Witnesses:

WM. N. MOORE,
E. G. SIGGERS.