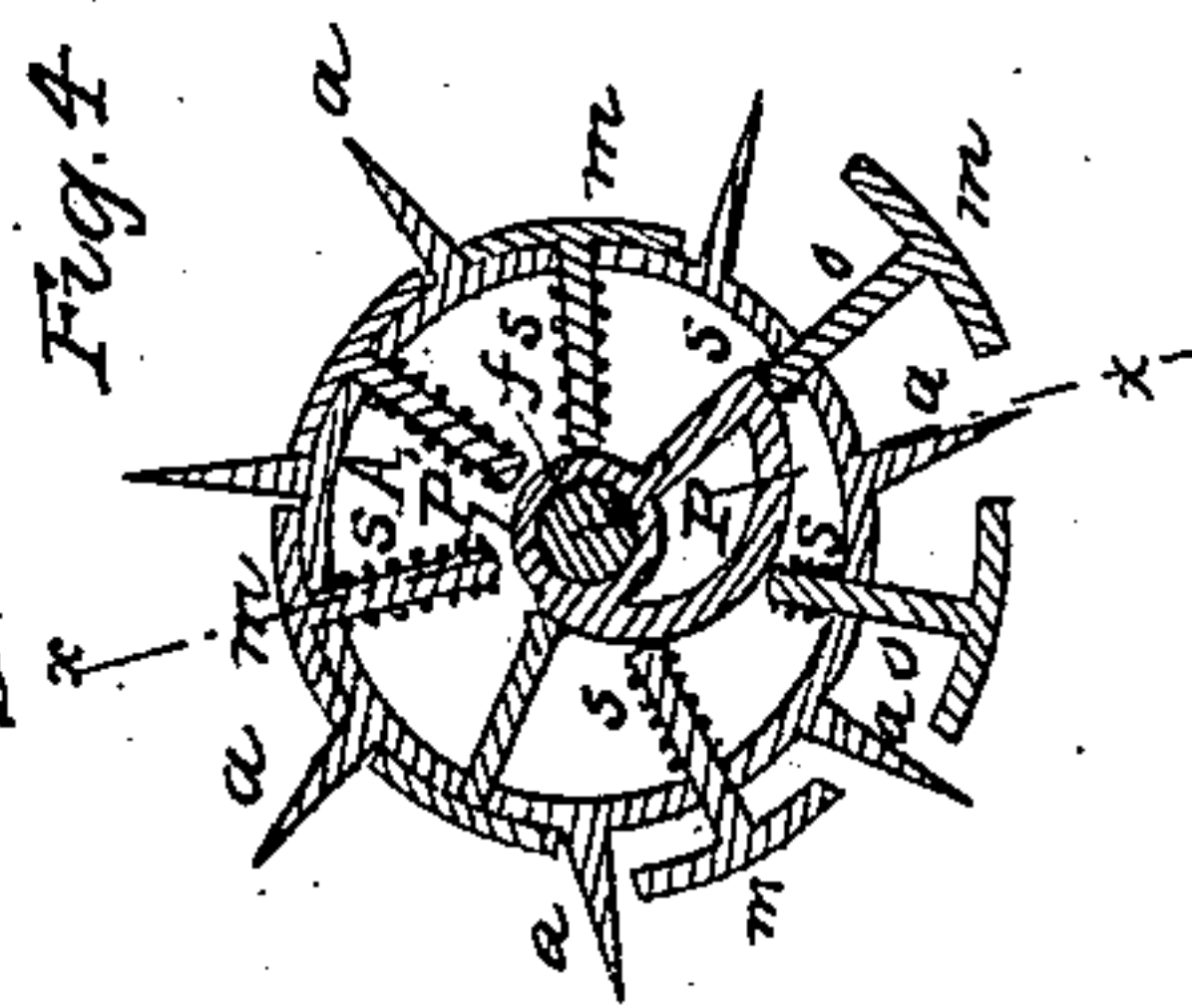
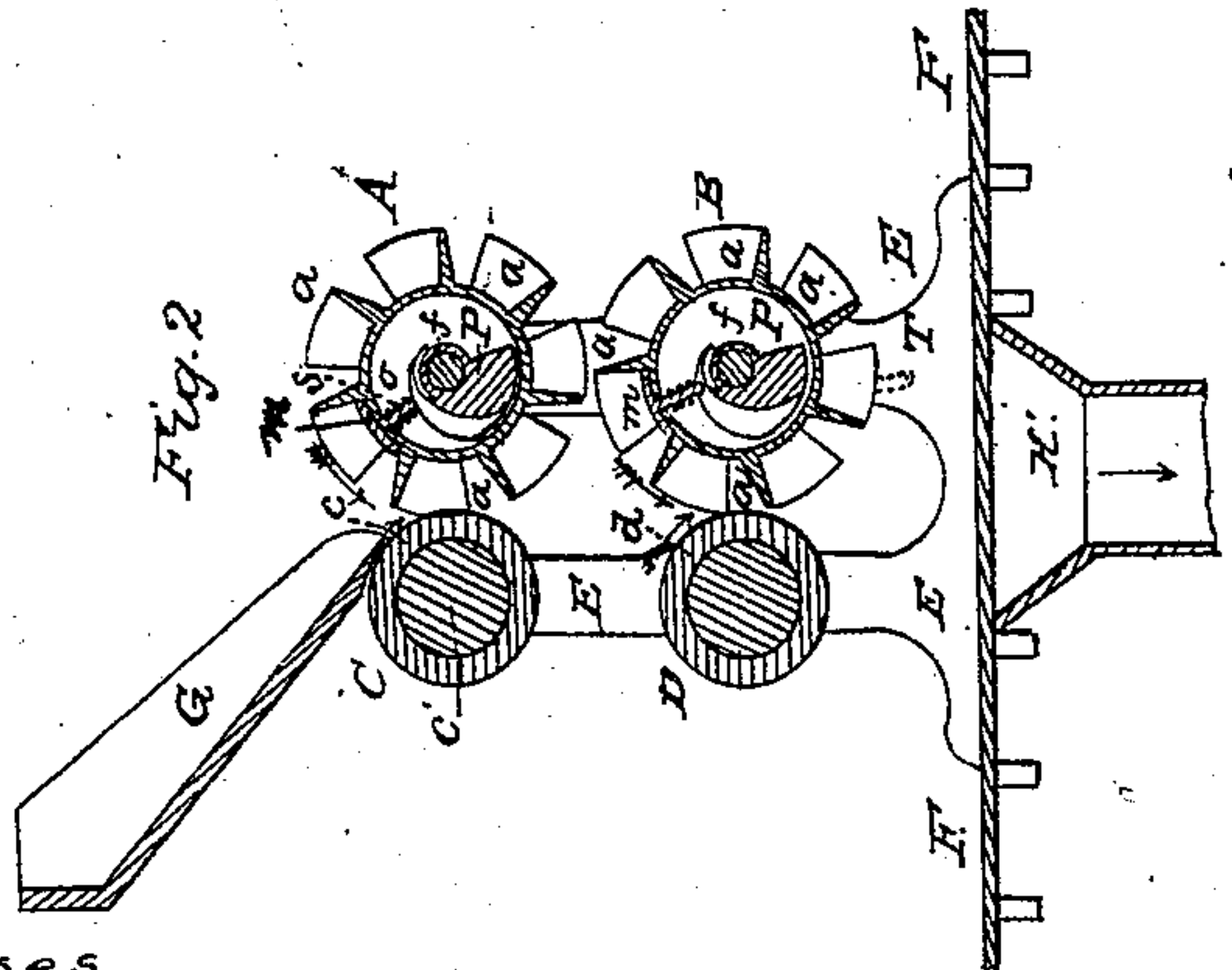
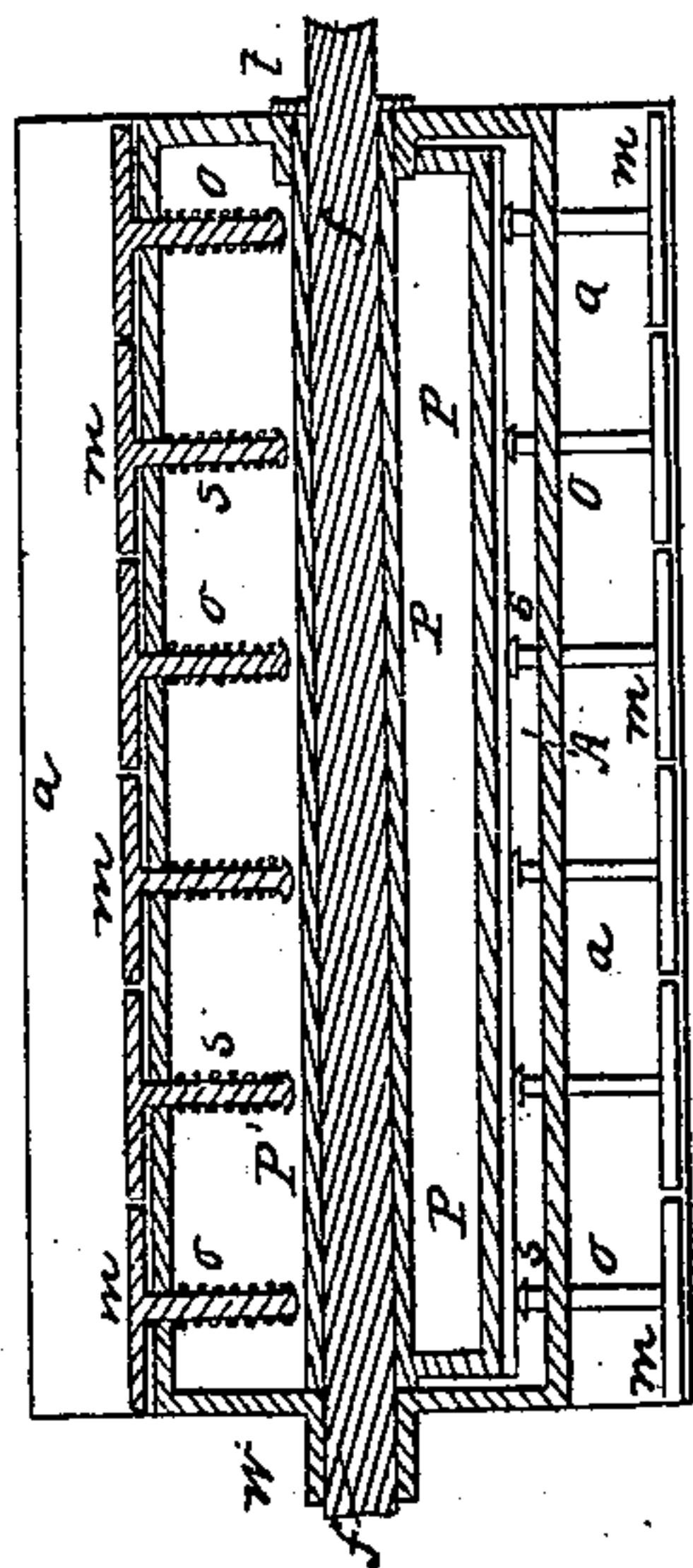
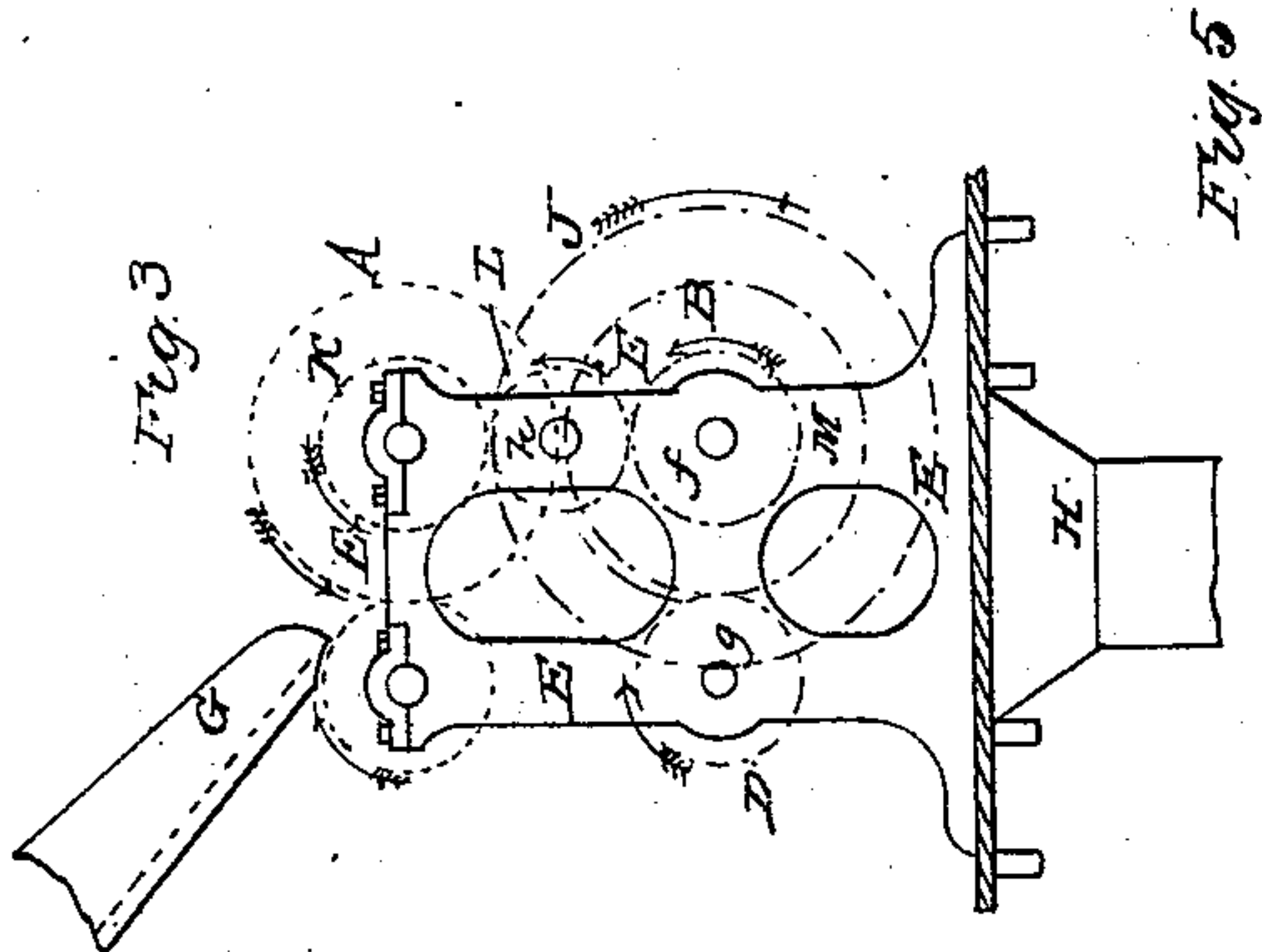
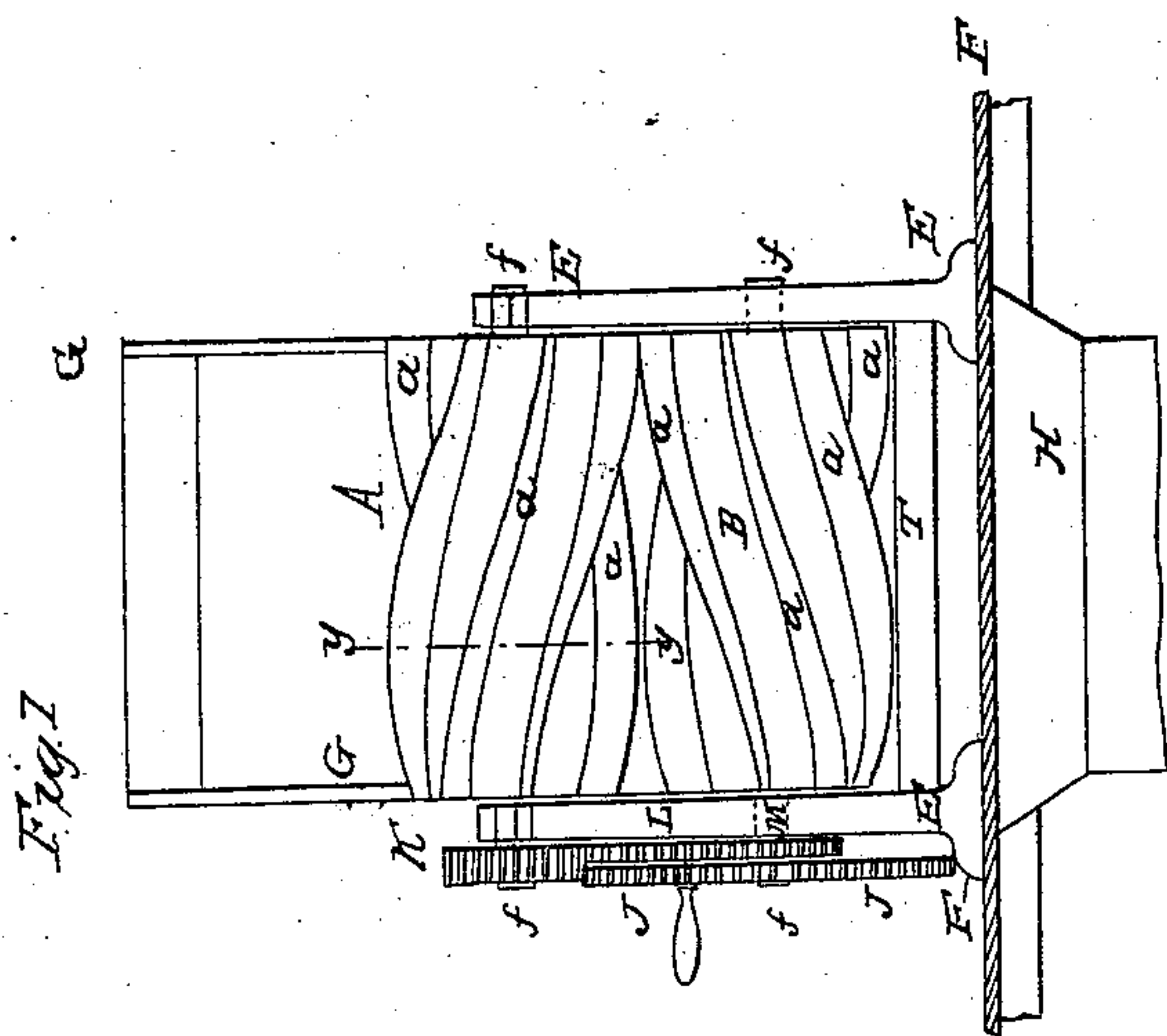


MILLER & McINTIRE.

Machine for Cutting up Fat.

No. 41,963.

Patented March 15, 1864.



witnesses
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Inventors

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UNITED STATES PATENT OFFICE.

FREDERICK MILLER AND J. N. McINTIRE, OF NEW YORK, N. Y., ASSIGNORS
TO FREDERICK MILLER.

IMPROVED MACHINE FOR CUTTING UP FAT.

Specification forming part of Letters Patent No 41,963, dated March 15, 1864.

To all whom it may concern:

Be it known that we, FREDERICK MILLER and J. N. McINTIRE, of New York, county of New York, in the State of New York, have invented certain new and useful Improvements in Machines for Cutting Up Fat, (to make lard, &c.;) and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this application.

Our invention relates to a novel machine by means of which we are enabled to take the large pieces of fat cut off in "cutting up" hogs, &c., and by an automatic mechanism cut these large pieces up into small bits of about the same average size and suitable to go to the rendering-kettle for the manufacture of lard.

Our automatic fat-cutting machine has for its objects to cut up into small pieces of about the same size the large and variously sized and shaped pieces of fat cut from hogs, (or other animals,) and to do this rapidly with an economical expenditure of power; and to these ends our invention consists in the several devices and combinations hereinafter described and claimed, constituting our improved machine.

To enable those skilled in the art to which our invention pertains to make and use our invention, we will proceed to describe the construction and operation of one of our improved machines, referring by letters to the accompanying drawings, forming part of this application, and in which—

Figure 1 is an elevation of one of our improved machines. Fig. 2 is a vertical section at the line *z z* of Fig. 1. Fig. 3 is an end view. Fig. 4 is a detail view on an increased scale, showing one of the cutter-cylinders in section, taken at the line *y y*, Fig. 1. Fig. 5 is a detail sectional view of cutter-cylinder, taken at the line *x x*, Fig. 4.

The tinted portions are those surfaces which come in the plane of the section.

In the several figures the same letter of reference indicates the same part of the machine.

A and B are two cutter-cylinders, which are mounted on suitable shafts or journals, *f f*, hung in bearings formed in the frame E of the machine. This frame E may be made of the

form shown or any other suitable shape, and carries also two other shafts, *g g*, on which are hung two rolls or plain cylinders, C D, which operate in conjunction with the cutter-cylinders A B in a manner which will be presently explained.

The rolls C D may be made of a central portion, *c' d'*, of wood or metal, covered with an annular shell or facing, *c d*, of spelter, lead, or other suitable soft metal or alloy, to run in contact with the knives of the cutter-cylinders A B. (See Fig. 2.) The cutter-cylinders are formed of a metallic cylinder, A, (see Figs. 4, 5,) on the face or periphery of which are secured numerous knives, *a*. These knives *a* are arranged radially, in cross-section, equidistant, and are made longitudinally of a spiral or helically-curved shape, (see Fig. 1,) the directions of their twist or curvature being different on the two cylinders A and B—that is, running in different directions—(see Fig. 1,) the object of which will be presently explained. In the spaces between the knives *a* are arranged plates *m*, which are provided with lugs or pins O on their sides adjacent to the cylinder A. The pins O pass through holes in the said cylinder, and have arranged around them spiral springs *s*, which exert a constant tendency to retain the plates *m* in contact with the exterior of the cylinder A. (See Fig. 4.) On the shaft *f* (which remains stationary in its bearings) is arranged and secured a hollow shaft or sleeve, P', which is formed with a helical cam-projection, P, and on this hollow shaft P' the cylinder A is mounted so as to turn freely, one end coming against a collar, *t*, on the shaft *f*, and the other being formed with a neck or journal, W, (see Fig. 5,) on which is keyed the pinion which drives it.

As the cylinder A rotates on the shafts *f* and P' the inner projecting ends of the pins O come successively into contact with the cam P, and are forced outward, (against the pressure of the springs *s*, which return them to their normal position after they pass the cam,) as clearly illustrated at Fig. 4, until they cause the plates *m* to come about even with the extremities or edges of the knives *a a*. The cam P is so arranged relatively to the rolls C and D and to the rotation of the cutter-cylinder

as that the plates *m* shall commence to move outward just as the knife next above the plate is leaving the roll C, (or D,) and the objects of these moving plates *m* is to force out the strips or pieces of fat between the knives, and which (in cold weather, when the fat is stiff) might wedge in and clog the machine.

We have described the construction and operation of the several parts of one of the cylinders A B and it will be understood that the two are duplicates except in the direction of the twist of their knives, and this difference we will now explain, and the object of it.

It will be understood that the large pieces of fat to be cut up are put onto the feed-board G, (or into a hopper so as to pass to the cutters,) from whence they pass down to and are carried in between the cutter-cylinder A and the roll C. Now, since the knives *a* of cylinder A run spirally, (so as to make a shearing cut,) it follows that if a large slab of fat passes down and is cut by this first set of cutters it will sometimes be cut and discharged in the form of a long narrow strip, (equal in width to the space between the knives,) and it is also clear that this strip, owing to the curvature of the cutters, will be discharged with one end considerably in advance of the other. Now, the next set of cutters, it will be seen, will commence to cut this lower end first, and their curvature being the reverse of the preceding set of cutters, it is obvious that the strip discharged from the first set of cutters will be cut into small pieces by the second set.

We have already explained the operation and object of the automatic clearers *m*. These plates force the pieces of fat between the cutters or knives outward to their extreme edges. Now, to prevent the possibility of the fat being carried around with the plates *m* by sticking to them, we arrange the lower knife-cylinder, B, so close to the upper one, A, that the former will take off (during its revolution) from the cylinder A or its plates *m* any fat adhering thereto, and immediately below the lower knife-cylinder we arrange a clearing-bar, T, (see Figs. 1 and 2,) which clears off the plates *m* of said cylinder.

H is a hopper or conduit into which the cut fat falls and through which it is discharged into any suitable receptacle.

We have shown the machine arranged on a floor, (or platform,) F; but it may be located as deemed most expedient and convenient. The cylinder A is driven by a pinion, K, and the cylinder B by a pinion, M, (see Fig. 1,) and these two pinions derive motion as follows, viz: On the projecting end of the lower shaft *f* is hung (so as to turn thereon) a large gear and fly wheel, J, which may be turned

by hand or other power, and which meshes into the pinion K. This latter drives an intermediate gear, L, hung on a stud projecting from the frame E, and which gear L drives the pinion M.

At Fig. 3, for the purpose of more clearly illustrating, we have shown the several gears by red lines, denoting their pitch-circles, and the cutter-cylinders and their respective rolls C D by blue circles, denoting their extreme circumferences. The arrows indicate the directions of motion of the several parts.

From what has already been said the general operation of the machine will be understood to be as follows, viz: The large pieces of fat are supplied to the table G, from whence they pass down between A and C, and from thence through B and D, and are discharged, all finely cut up, through the conduit H.

It will be understood that our invention is subject to very many changes in form and proportion and in the detail construction of the machine without departing from its spirit.

Having fully described the construction and operation of our improved machine, what we claim therein as new, and desire to secure by Letters Patent, is—

1. The employment of the cutter-cylinder A with its knives *a*, the roll C, and the cutter-cylinder B with its knives *a* and roll D, the whole arranged and operating as described.
 2. The employment, in combination with a cutting-cylinder, of the clearing plates *m*, arranged to operate as and for the purposes described.
 3. The arrangement of the lower cutter-cylinder in such manner with the upper as that the former will clear off the plates *m* of the latter, as described.
 4. The use of the clearer-bar T, in combination with the cylinder B and its plates *m*, the whole arranged and operating as specified, for the purpose set forth.
 5. The combination of the two cutter-cylinders, one over or in advance of the other when each is made with spiral knives and the knives of the two are twisted in opposite directions, as and for the purposes set forth.
- In testimony whereof we have hereunto set our hands and seals.

FREDERICK MILLER. [L. S.]
J. N. MCINTIRE. [L. S.]

Witnesses to the signature of F. Miller:
J. N. MCINTIRE,
GEORGE HAEGEMAN.

Witnesses to the signature of J. N. McIntire:
WM. H. BISHOP,
J. J. NEAGLE.