

(No Model.)

2 Sheets—Sheet 1.

H. C. POTTS.

FEEDING MECHANISM FOR ROLLER MILLS, PURIFIERS, &c.

No. 295,504.

Patented Mar. 18, 1884.

Fig. 1.

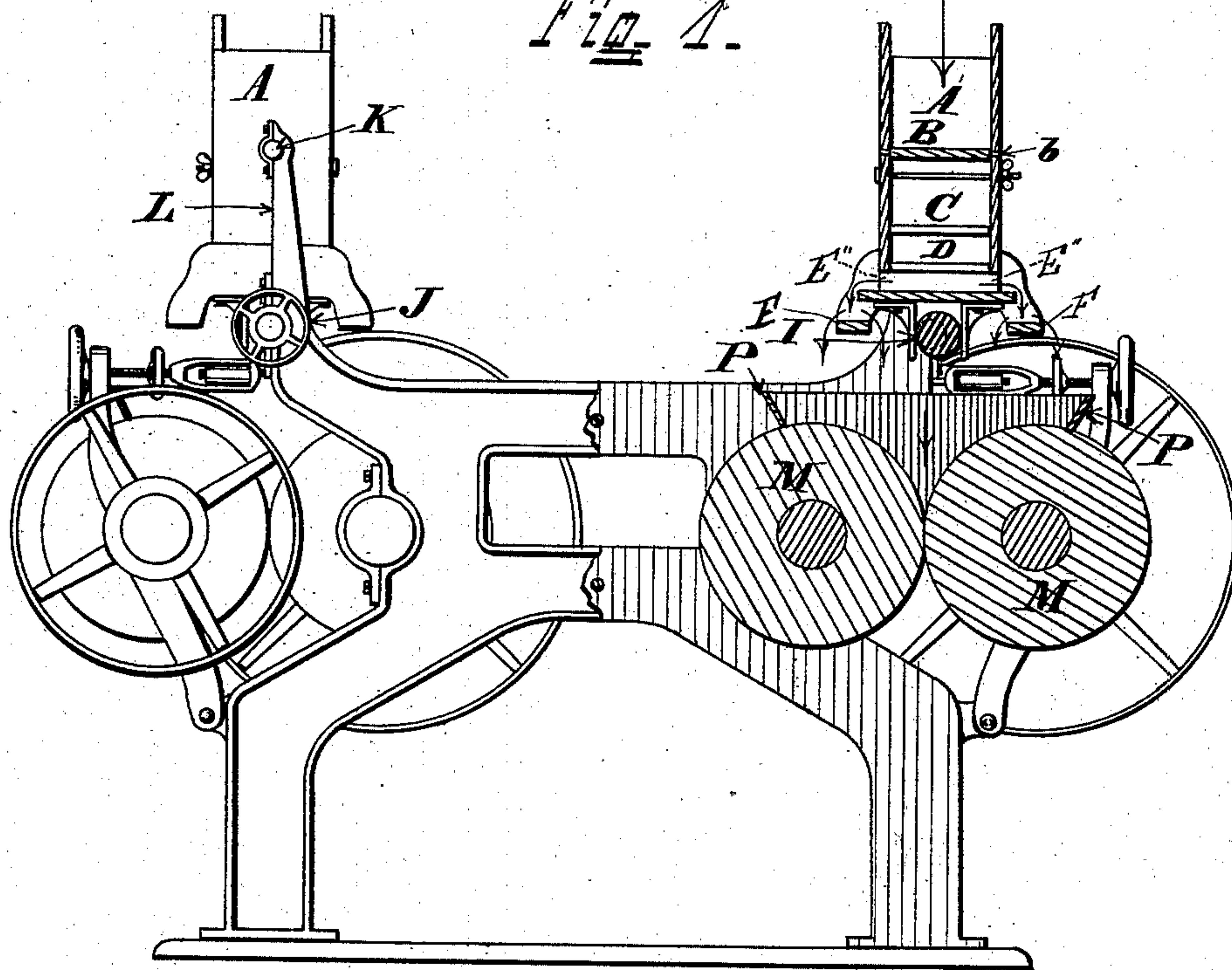
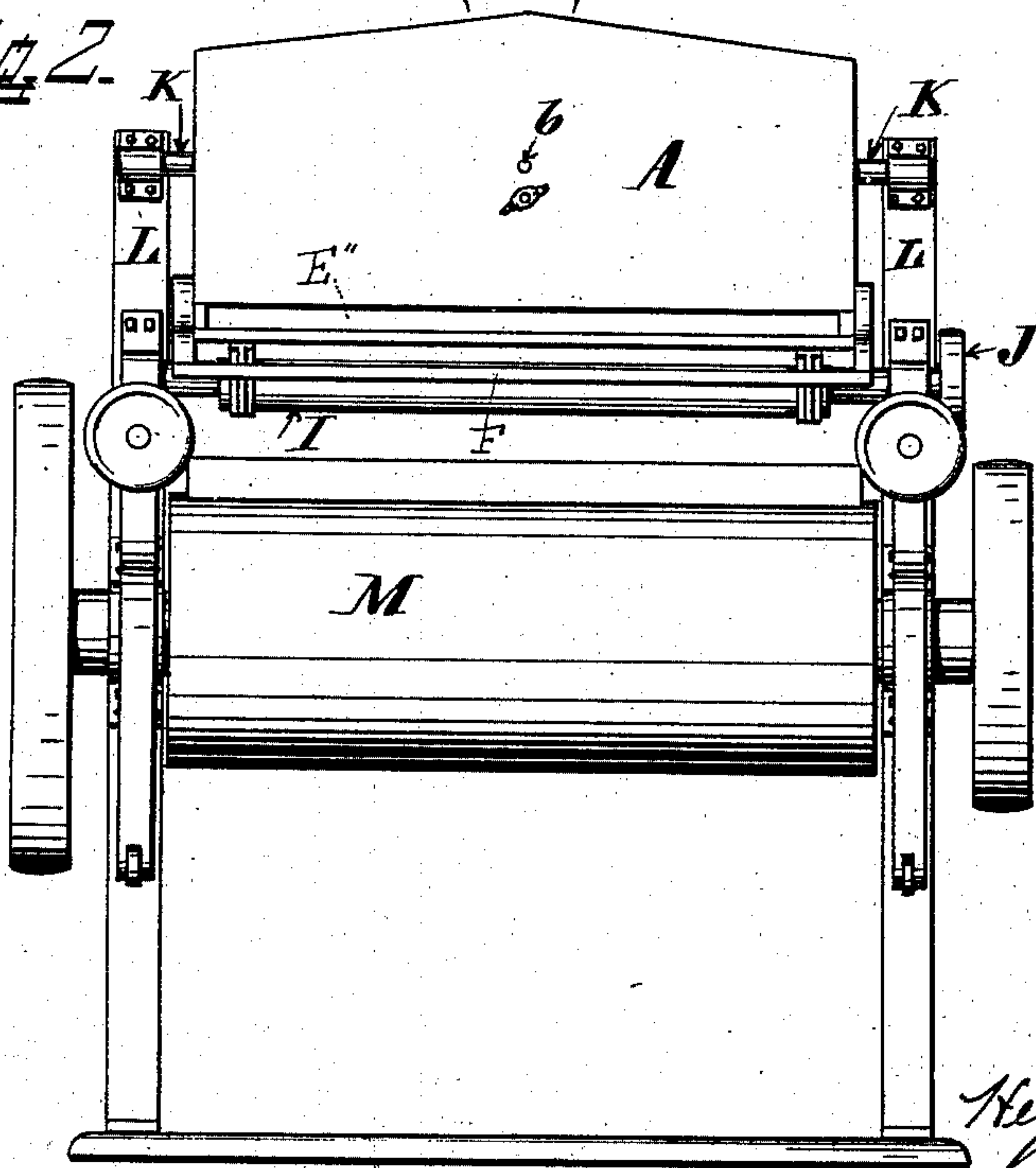


Fig. 2.



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Fig. 3.

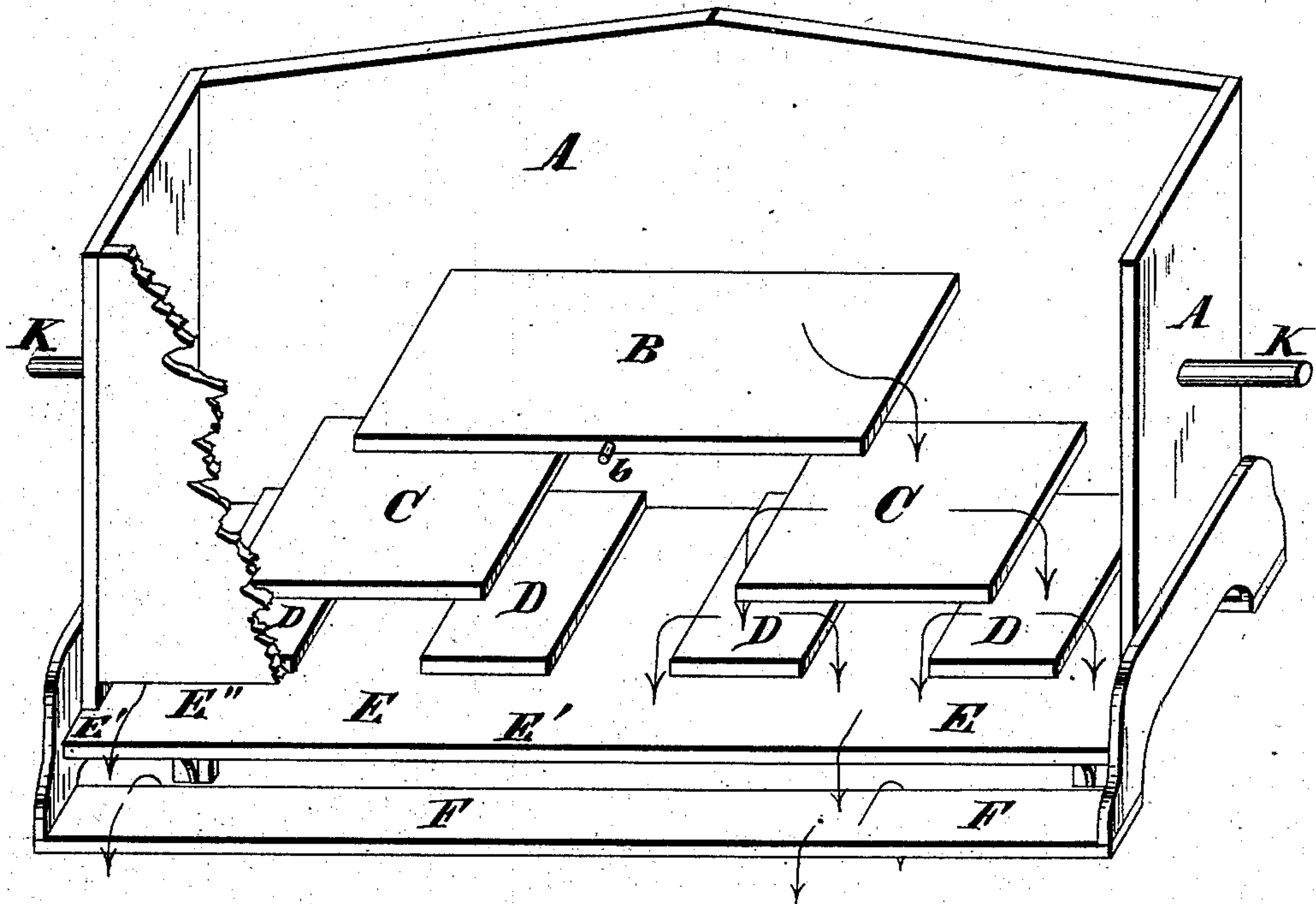


Fig. 4.

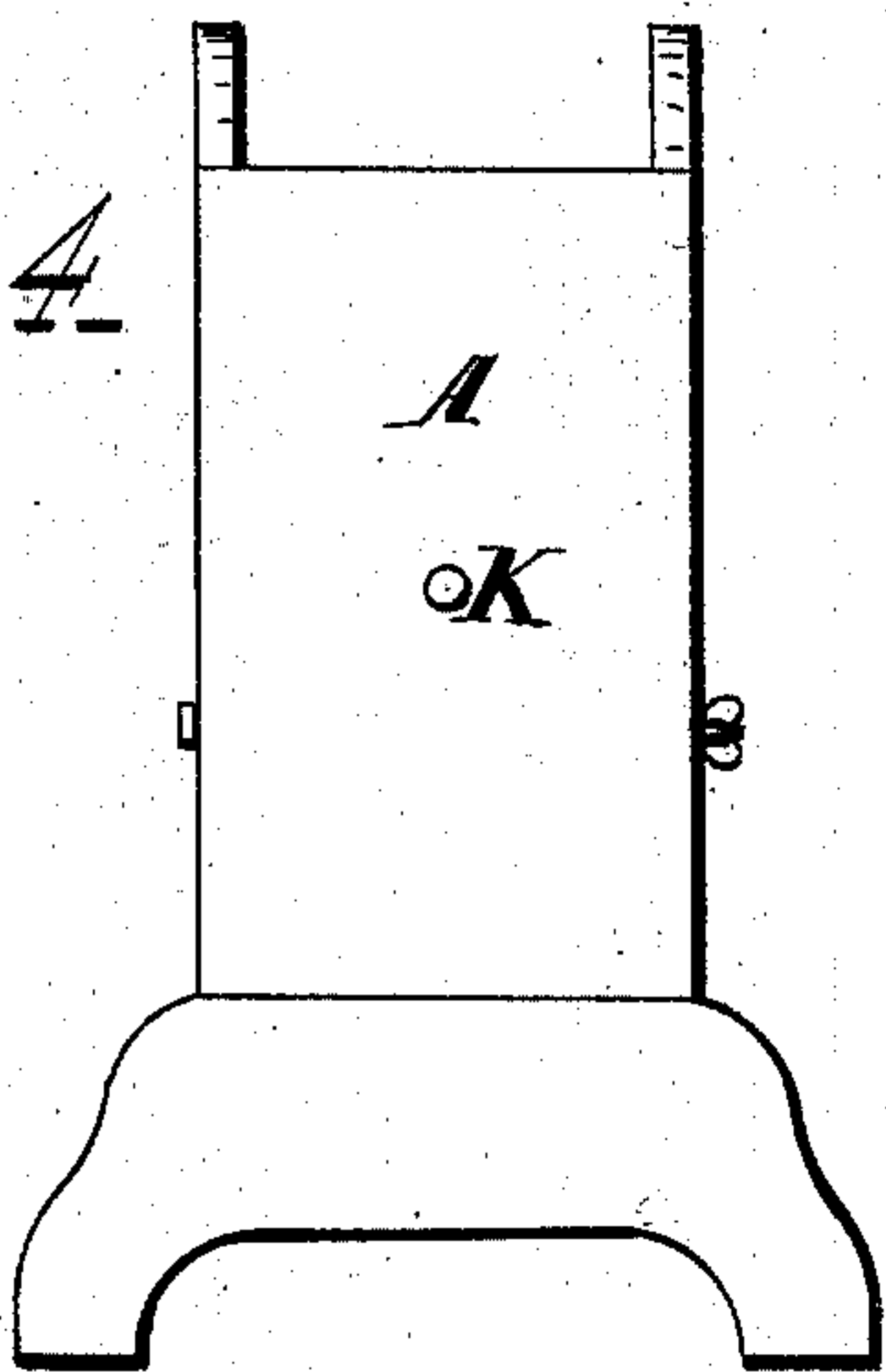
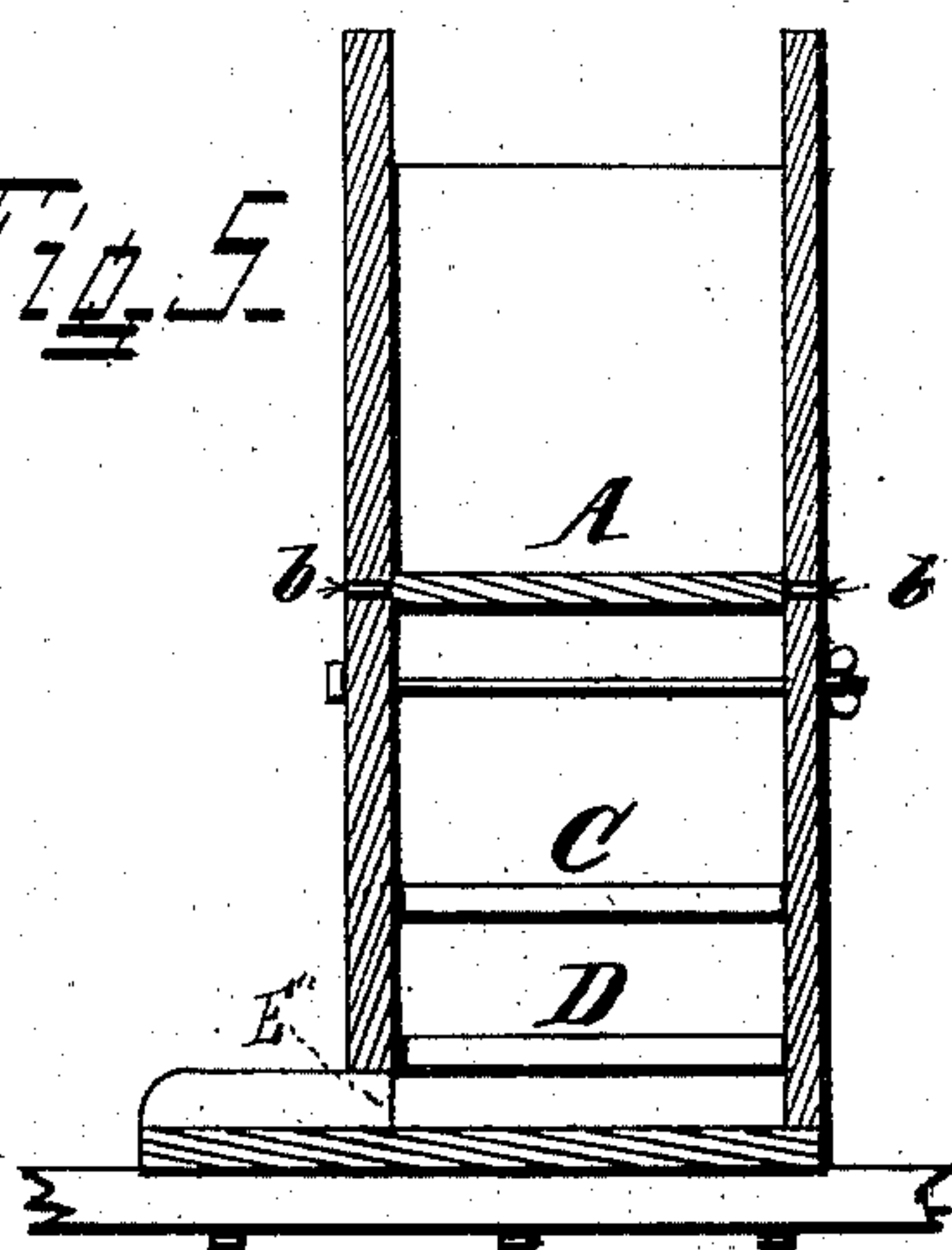


Fig. 5.



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FEEDING MECHANISM FOR ROLLER-MILLS, PURIFIERS, &c.

SPECIFICATION forming part of Letters Patent No. 295,504, dated March 18, 1884.

Application filed December 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. POTTS, a citizen of the United States, residing at Lancaster, in the county of Garrard and State of Kentucky, have invented certain new and useful Improvements in Feeding Mechanism for Roller-Mills, Purifiers, and like Machinery, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to an improvement in feeding devices for roller-mills, middlings-purifiers, and the like, where the grain or material to be crushed, ground, or bolted, should be evenly distributed over a large surface and evenly and constantly fed.

It consists of a hopper-box provided with a series of steps or platforms so arranged with relation to the hopper and one another that the grain or material to be fed may be supplied to the feeder in a single stream, and so distributed and divided by the steps as to be fed in one or more particular sheets flowing in an even stream and of equal density throughout.

In the accompanying drawings, my invention is illustrated as applied to a roller grinding-mill; but with slight formal changes it may be applied to purifiers, or indeed any class of mills or machines in which the feed-supply must be evenly distributed over an extended surface; and I do not confine the application of my invention to roller-mills.

Figure 1 is a side elevation of a double roller-mill, partly broken away to show my feed device. Fig. 2 is an end elevation of the same. Fig. 3 is a perspective view, part of the box being broken away to show the arrangement of the steps. Fig. 4 is an end elevation of the feeder. Fig. 5 is a modified form for use in a purifier where the middlings are fed in one stream or sheet instead of several.

A is a box of any convenient size and shape. The preferable form where the feeder is used on a roller-mill is rectangular, and should correspond in length with the length of the rolls of the mill, and its width should be less than the distance between the axes of the two rolls, as shown in the drawings. Within the box are a series of steps. The upper one, B, is midway between the ends of the box, and is supported on pivots *b*. At a convenient distance below the step B are two shorter steps, C, which are horizontal and so situated that the middle of each is directly below one end of the upper step, B. The steps C, and, indeed, all below B, may also be on pivots, if desired, though, as a rule, they are better if rigid. Below the steps C are four more steps, D, shorter than the steps C and so located that the middle of each comes under one end of the step above it. There may be several more series of steps, if desired, arranged on the same plan the number in each series being double the number immediately above. Below them all is a floor, E, extending the full length and breadth of the box A, and, if desirable, the sides E' may extend beyond the sides of the box, as shown in Fig. 3. The ends of the box A are closed. The sides are open near the bottom to allow the grain to pass out, forming discharge-apertures E'', which may be provided with gates to cut off the feed, which gates, if desired, may be simultaneously operated. Beneath the bottom E, and extending the full length of the feeder, are steps or platforms F—one on either side—(only one being shown in Fig. 3.) The middle of each platform F is directly below the edge E' of the bottom E. This feeder A is arranged over the roller-mill in any suitable manner. In the drawings it is shown suspended by pivots K on the arms L. As it is thus suspended, motion may be imparted to it by means of the eccentric I and pulley J, or in any convenient manner adapted to the particular machinery to which the feeder is applied.

The grain or material to be fed is conveyed to the feeder A in a stream, which is adjusted to fall as near as may be on the middle of the upper step, B. Gravity and the motion imparted to the feeder by the eccentric I cause the grain to flow in two streams or sheets over the ends of the step B, which is so adjusted on the pivots *b* that one-half of the grain flows over each end onto the steps C. These streams are again divided and flow over the ends of the steps C onto the steps D, and so on over as many series of steps as may be deemed desirable. Each series of steps divides each stream of grain into two of equal size. In the feeder illustrated in the drawings the original stream of grain would be poured on the floor

E in eight equal streams or sheets spread over the entire floor E. The motion of the box causes this grain to pass out of the openings E' in two broad streams or sheets and fall on the last steps or platforms, F, where it is again divided and passes over the edges of the steps F in thin sheets onto the rolls of the mill M. The sheets or streams of grain passing from the steps F are at right angles to the plane of the streams or sheets passing over the steps within the hopper; and, indeed, the steps F may be dispensed with entirely in some classes of machines, and the grain pass directly from the floor E to the mill or machine. During its passage the grain has become so evenly distributed that it is fed to the rollers in precisely even quantities throughout their entire length.

Heretofore the feeding devices for roller-mills and that class of machinery have had two defects. Those known as the "roller-feed" were liable to clog at some point by reason of the particles of bran or some other substance sticking to the roller. This clogging can never occur with my feeder. Where "shake-feeds" have been used the pulsating movement of the shaker caused the grain to be fed, not in a constant, unvarying stream or sheet, but at regular intervals with each movement of the shaker, and no matter how frequent these pulsations were, with each motion the grain was discharged between the rolls and tended to force them apart, for the instant, so that the rolls themselves had a slight vibrating movement. This was injurious to the rolls and the mill and prevented perfect and even grinding or breaking of the grain. This defect is remedied by my feeder, as there are not only four streams or sheets of grain falling upon the rolls, but these sheets are distributed over the entire surface of the rolls between the guides P P, so that the grain is not only distributed exactly even throughout the length of the rolls, but is fed in an even and constant supply. This same construction of feeder may be used for various other kinds of mills or ma-

chinery. In applying it to a purifier, as shown in Fig. 5, only one opening, E'', is used, and the feeder may simply be screwed to the middle-frame.

The purpose of the pivot b, Fig. 3, supporting the step or platform B is to permit the adjustment of the step B, so that it will always be level or horizontal, even if the mill is set at a slight incline. Similar pivots may be used on the other steps for the same purpose, if desirable.

Having thus fully described my invention, I claim—

1. A feeder for roller-mills, purifiers, and like machinery, comprising a feed-box or hopper and a series of steps constructed and arranged to pass the material to be fed over the first or upper step in two equally-divided streams or sheets, each of which is in turn received upon the next step and equally divided into two other sheets or streams, and so on, for the purpose of distributing the material evenly over an extended surface and supplying a constant and regular feed.

2. In a shake-feed, a series of steps, B C D, for evenly distributing the grain, in combination with the floor E and a feed-box or hopper having discharge-apertures E'', substantially as set forth.

3. In a shake-feed for roller-mills, the series of steps B C D, &c., floor E, and a feed-box or hopper, A, having apertures E'', in combination with the steps F, at right angles to the others, as and for the purpose described.

4. In a roller-mill or purifier feed, the combination, with the feed-box or hopper, of a series of substantially-horizontal division-plates, arranged substantially as described, whereby the inflowing stream of grain or middlings is divided and subdivided as often as desired, in order to discharge it in one or more thin, even, and continuous sheets.

HENRY CLAY POTTS.

Witnesses:

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J. B. JOHNSTON.