

(No Model.)

2 Sheets—Sheet 1.

J. F. AYRES.
FLOUR BOLT.

No. 310,772.

Patented Jan. 13, 1885.

Fig. 1

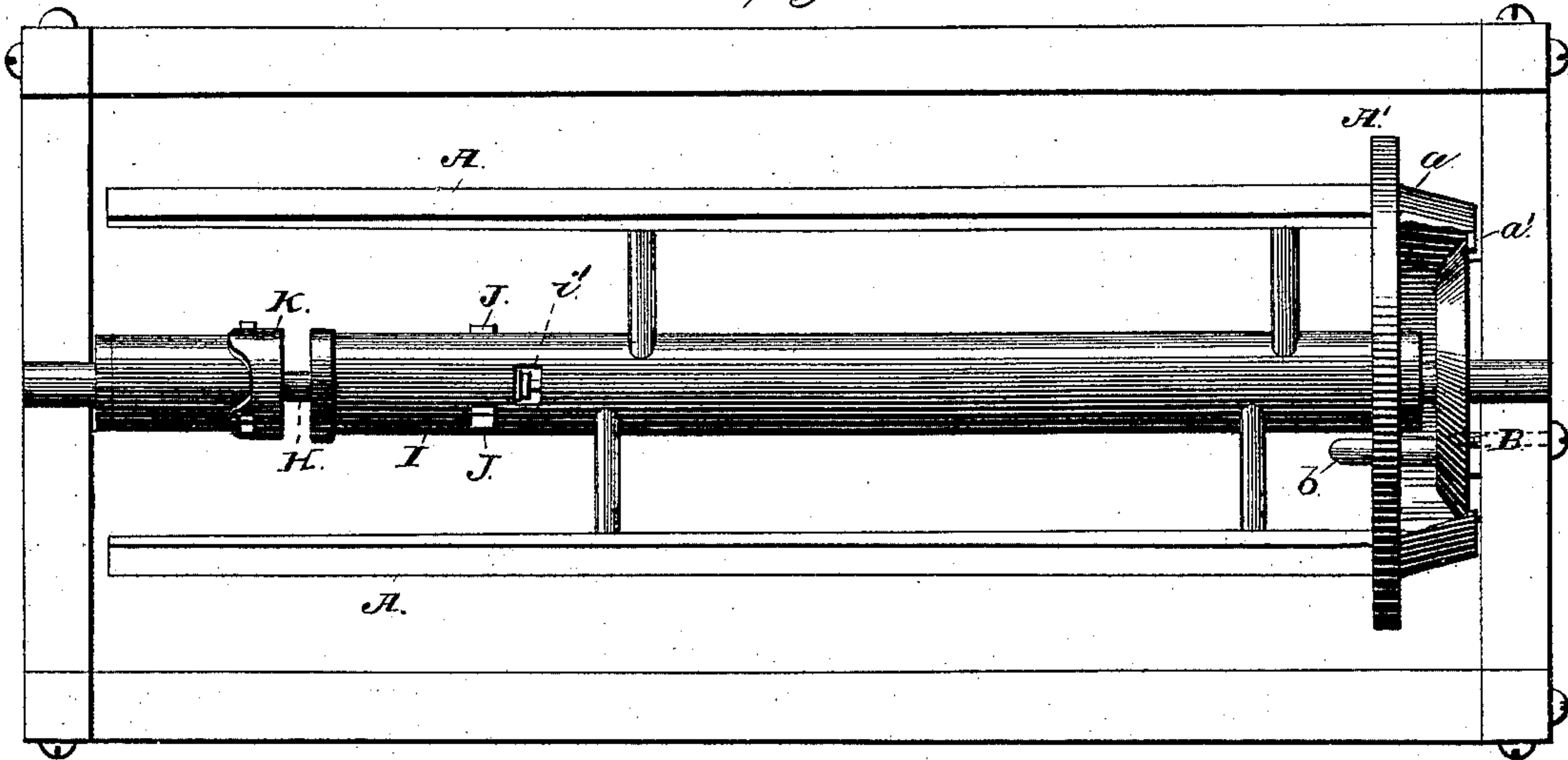
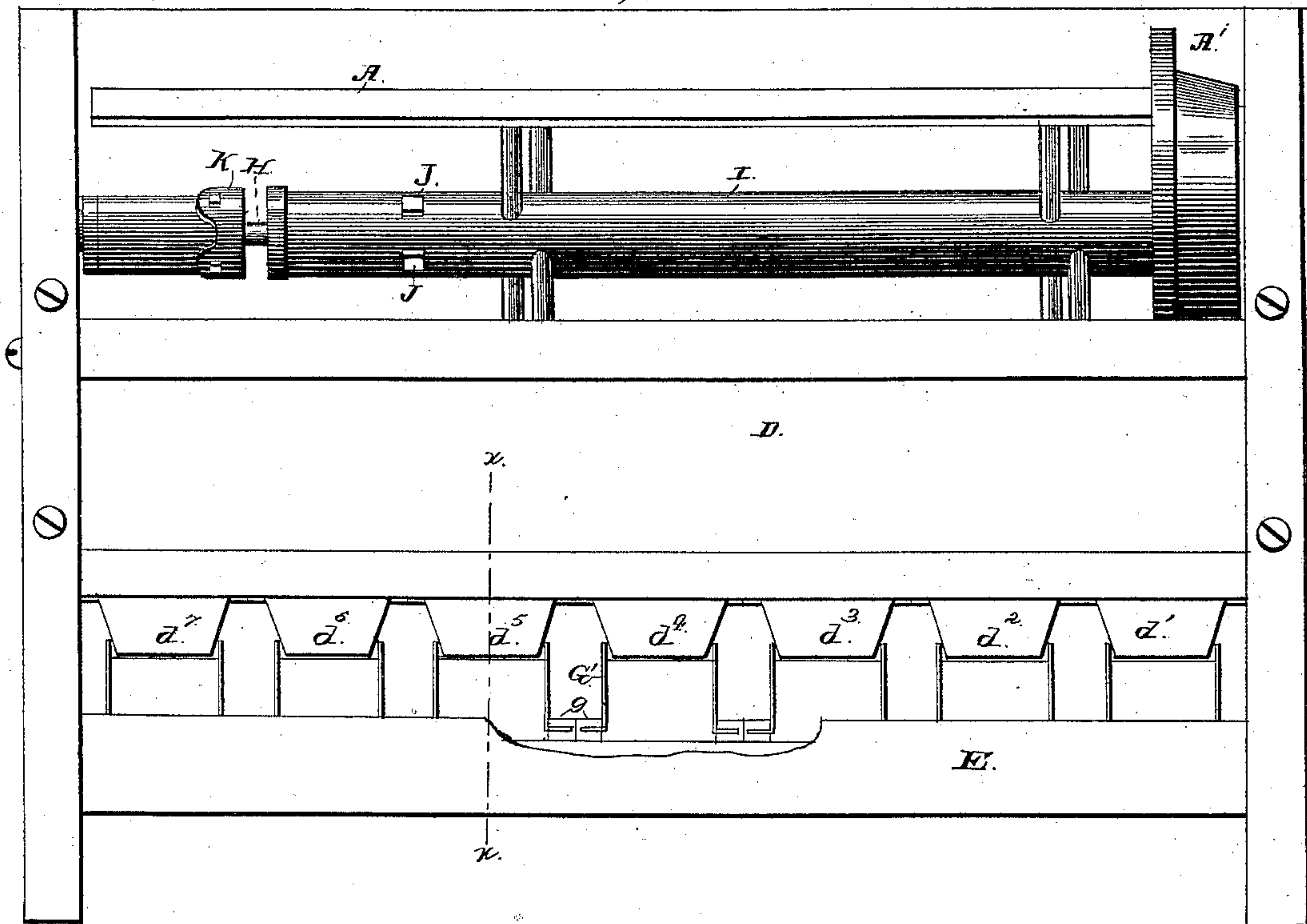


Fig. 2



WITNESSES

N. A. Clark.
P. B. Murphy

INVENTOR
John F. Ayres
By R. B. & A. S. Lacey
ATTY.

(No Model.)

2 Sheets—Sheet 2.

J. F. AYRES.
FLOUR BOLT.

No. 310,772.

Patented Jan. 13, 1885.

Fig. 3.

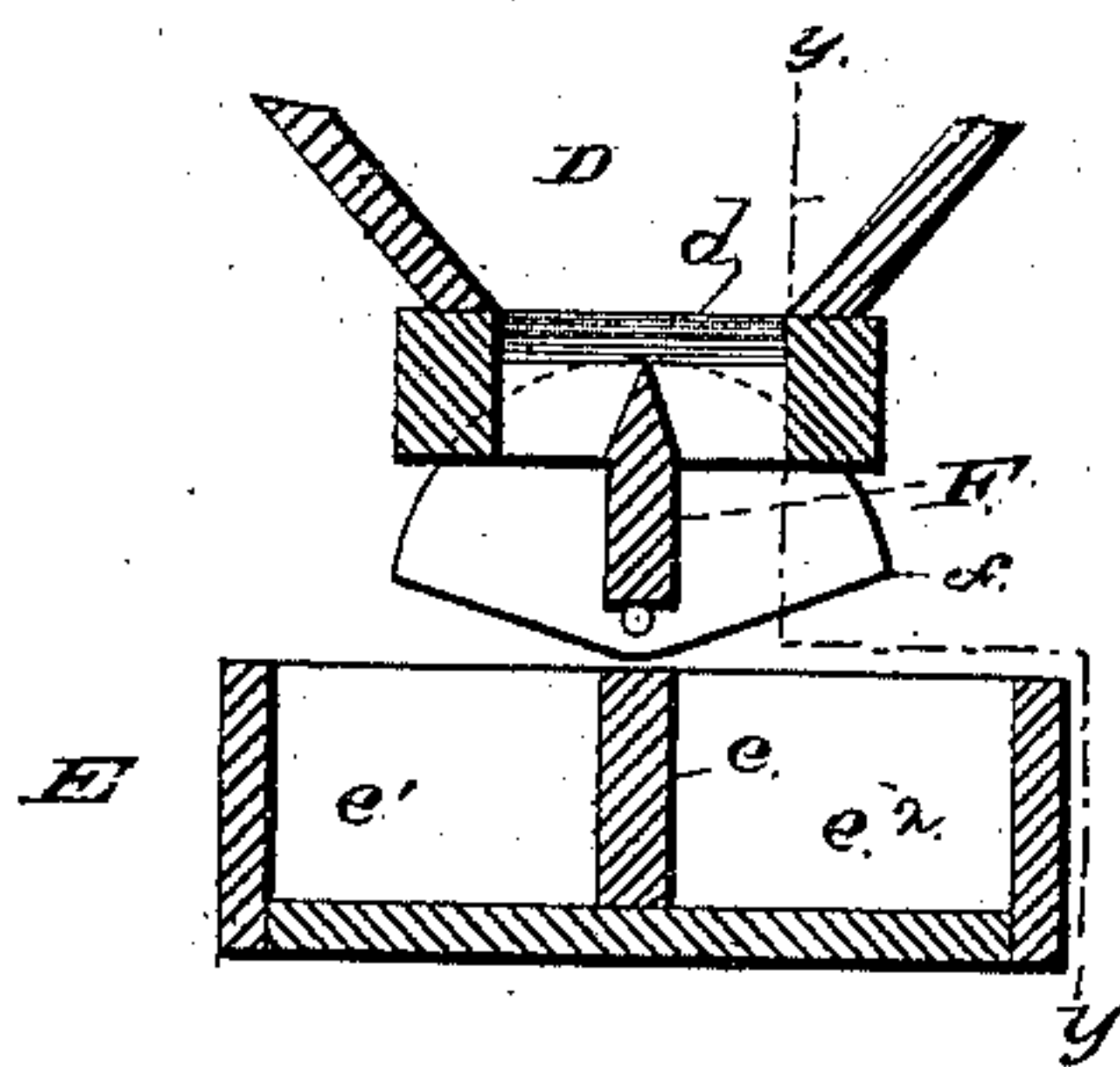


Fig. 4.

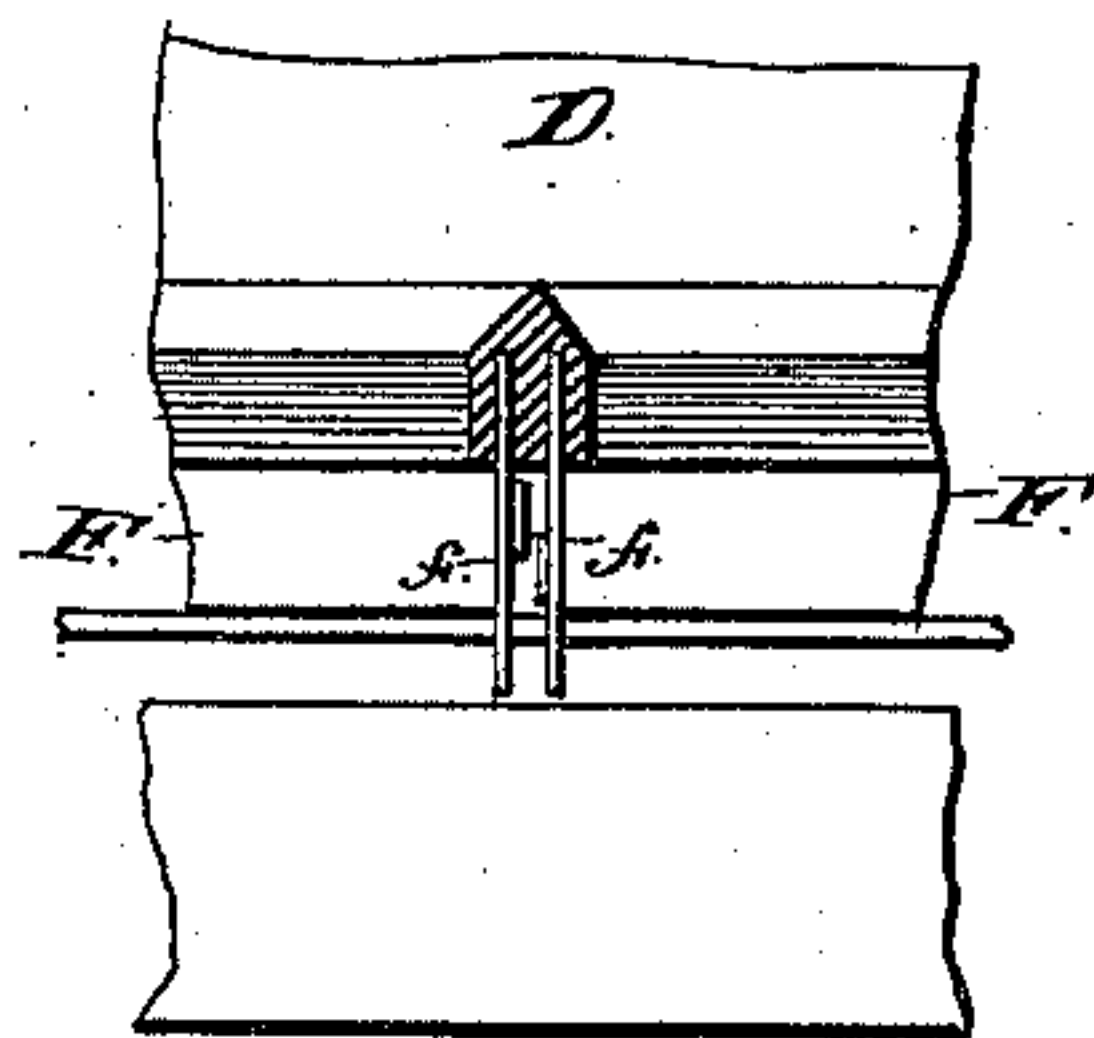
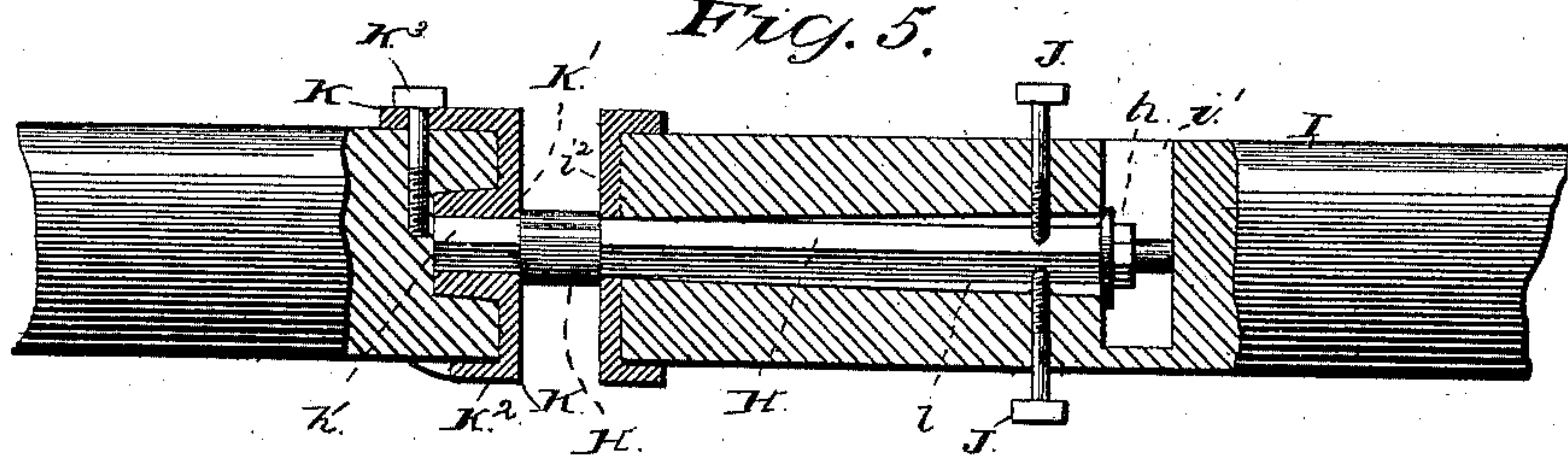


Fig. 5.



WITNESSES

W. A. Clark.
P. B. Murphy.

INVENTOR

John F. Ayres
By R. W. Lacey

ATTY

UNITED STATES PATENT OFFICE.

JOHN F. AYRES, OF ALLOWAY, NEW JERSEY.

FLOUR-BOLT.

SPECIFICATION forming part of Letters Patent No. 310,772, dated January 13, 1885.

Application filed April 25, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. AYRES, a citizen of the United States, residing at Alloway, in the county of Salem and State of New Jersey, have invented certain new and useful Improvements in Flour-Bolts; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to bolts and to that class of said inventions commonly known as "rotary bolts."

It consists in the novel construction and combination hereinafter described and claimed.

In the drawings, Figure 1 is a plan, and Fig. 2 a side elevation, of my machine. Fig. 3 is a detail view showing the discharging mechanism. Fig. 4 is a detached section in line *yy*, Fig. 3. Fig. 5 is a detail view of the bolt-shaft, broken part in section to better illustrate the novel features thereof presently.

The bolt *A* is adapted at its end *A'* to receive the middlings, and is so formed as to feed same toward its opposite end as it revolves. This may be accomplished by forming the bolt with an increasing diameter toward its lower end, as shown, or by inclining said bolt, both of which forms are common in the art. In practice I cover this bolt with screen-cloth having a mesh gradually increasing from end to end, so that the stuff bolted by different portions of said bolt will vary in fineness. The receiving or feed end of the bolt is provided with a head-block, *B*, through which the spindle of the bolt-shaft turns, the said block being secured rigidly to the framing of the machine. A feed-pipe, *b*, extends from this block into the bolt and serves as a means for feeding the middlings thereinto. A hood, *a*, is secured with receiving end of the bolt, and has a flange, *a'*, extending inward beyond the periphery of the head-block, so as to practically inclose said block within the bolt. The pipe or tube *b* may be extended upward beyond the head-block and connected with a hopper, or the middlings may be otherwise fed thereinto, as desired. The bolt is arranged in the bolting-chest *D*, the bottom of which is

provided with discharge-spouts *d*, arranged in a series extending the full length of the said chamber and of the bolt. The receiver or box *E* is divided by a central partition, *e*, into two troughs, *e'* *e''*, as clearly shown, both of which are arranged, under certain circumstances, presently described, to receive the stuffs from the spouts *d'* *d''* *d'''* *d''''* *d'''''* *d''''''*, the division *e* being arranged midway of each of said spouts, as most clearly shown in Fig. 3. These spouts may be varied in number to suit the maker. It will be seen that the stuff discharged through spout *d'* will be of a different grade from that discharged through spout *d''*, and so of any other two spouts of the series.

It is desirable to distinctly separate the middlings-discharge at the various points of the bolt. I do this by discharging the spouts *d* into different troughs. A convenient way of doing this is to throw the discharge of the adjacent spouts—say *d'* *d''*—into the opposite troughs *e'* *e''*, and that of the alternate spouts—say *d'''* *d''''*—into the same spout, the intervening space occasioned by throwing the intermediate spout into the other trough serving to distinctly mark the line between the several heaps in each trough. This may be done in several ways. The trough may be permanently fixed to so operate; but I prefer to so construct the device that the discharge of any of the spouts may be thrown at will into either of the troughs. This may be accomplished by the construction shown in Figs. 3 and 4, in which is shown a board, *F*, pivoted at its lower edge, *F'*, centrally below the spout and above the partition *e* of the receiver *E*. The upper edge of this board is adjustable against either side of the spout, so as to effectually discharge the middlings passed through said spout in either one desired of the troughs. I provide these boards with plates *f* on their opposite ends, arranged to operate on opposite sides of the discharge-openings, as clearly shown in Fig. 5.

Difficulty is experienced in rotary bolt by reason of the bolt not running true, owing to some unequal wear or other disarrangement of the gudgeons or spindle. To obviate this, I form the gudgeon *H* separate from the shaft *I*, and have its shank or tang inserted in a suitable socket, *i*, formed from the end of the shaft. A mortise, *i'*, intersects the socket *i* at the inner end of the latter and serves to per-

mit the operation of the retaining-nut *h*,
 screwed on the rear end of the gudgeon, as
 clearly shown in Fig. 6. The outer end of the
 socket is made to fit the gudgeon, while its in-
 5 ner end is larger than the corresponding end
 thereof. This may be accomplished by taper-
 ing the gudgeon downward to its inner end,
 or by increasing the diameter of the socket *i*
 toward said end, and would give the same re-
 10 sult in either case. The inner end of the gud-
 geon will be seen to be movable. Now, by
 moving or adjusting this end of the gudgeon
 and securing it at the desired points its outer
 or movable end will be turned up. Set-screws
 15 *J* are turned through the shaft, and their points
 bear against the inner end of the gudgeon. I
 usually employ four of these screws. By turn-
 ing these the gudgeons may be readily adjust-
 ed and trued up, as will be obvious.

20 It is frequently desirable to couple together
 the shafts of two or more bolts, and sometimes
 to form the shaft of the bolts in sections
 coupled together, this latter for the purpose of
 enabling the adjustment of the gudgeon, as be-
 25 fore described. To effect this, I provide the
 gudgeon with an angular stem, *h'*, fitted to en-
 ter the central opening, *K'*, of the thimble *K*,
 which is provided with a flange or flanges *K*²,
 fitted to extend over the adjoining shaft or
 30 section, and to be secured thereto by means of
 a bolt or bolts, *K*³, or in other suitable manner
 desired. By this construction the sections or
 shafts may be quickly coupled or uncoupled,
 as desired.

35 It is manifest that where so desired the in-

tersecting mortise *i'* and retaining-nut *h* may
 be dispensed with, and the gudgeon be retained
 in the socket by other means, for instance,
 by forming in it an annular groove and fitting
 the end plate, *i*², of the shaft thereto; but I pre- 40
 fer the construction as shown and before de-
 scribed.

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

1. The combination, with the series of spouts 45
*d' d*², &c., and the two troughs arranged below
 and on opposite sides thereof, of the switches
 or shunts composed of plates *f*, arranged at
 the ends of the spouts *d' d*², &c., and the boards
F, pivotally supported at their lower edges, 50
 and having their upper edges projected into
 the said spouts and adjustable from side to side
 thereof, substantially as set forth.

2. In a rotating bolt, the combination of the
 shaft *I*, provided with a socket, *i*, the gudgeon 55
 having its shank seated and movable in said
 socket, and the adjusting-screws, substantially
 as set forth.

3. The combination of the rotary bolt hav-
 ing its shaft *I*, provided with end socket, *i*, and 60
 intersecting mortise *i'*, the gudgeon having its
 shank seated in said socket, the retaining-nut
h, and the screws *J*, all substantially as and
 for the purposes set forth.

In testimony whereof I affix my signature in 65
 presence of two witnesses.

JOHN F. AYRES.

Witnesses:

R. C. MILLER,

R. B. S. DIAMENT.