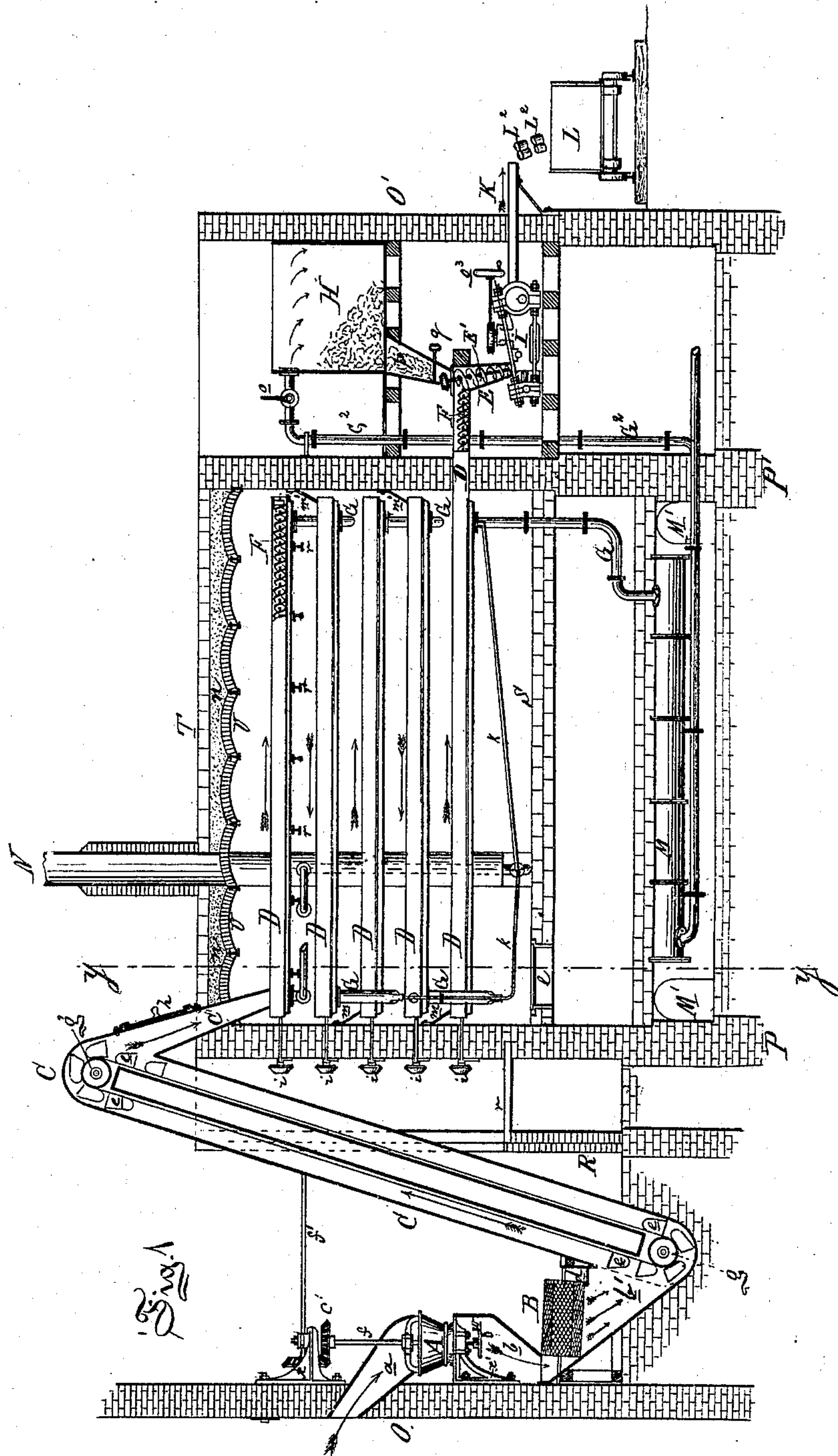


A. E. BARTHEL.  
PEAT-MACHINE.

No. 171,210.

Patented Dec. 21, 1875.



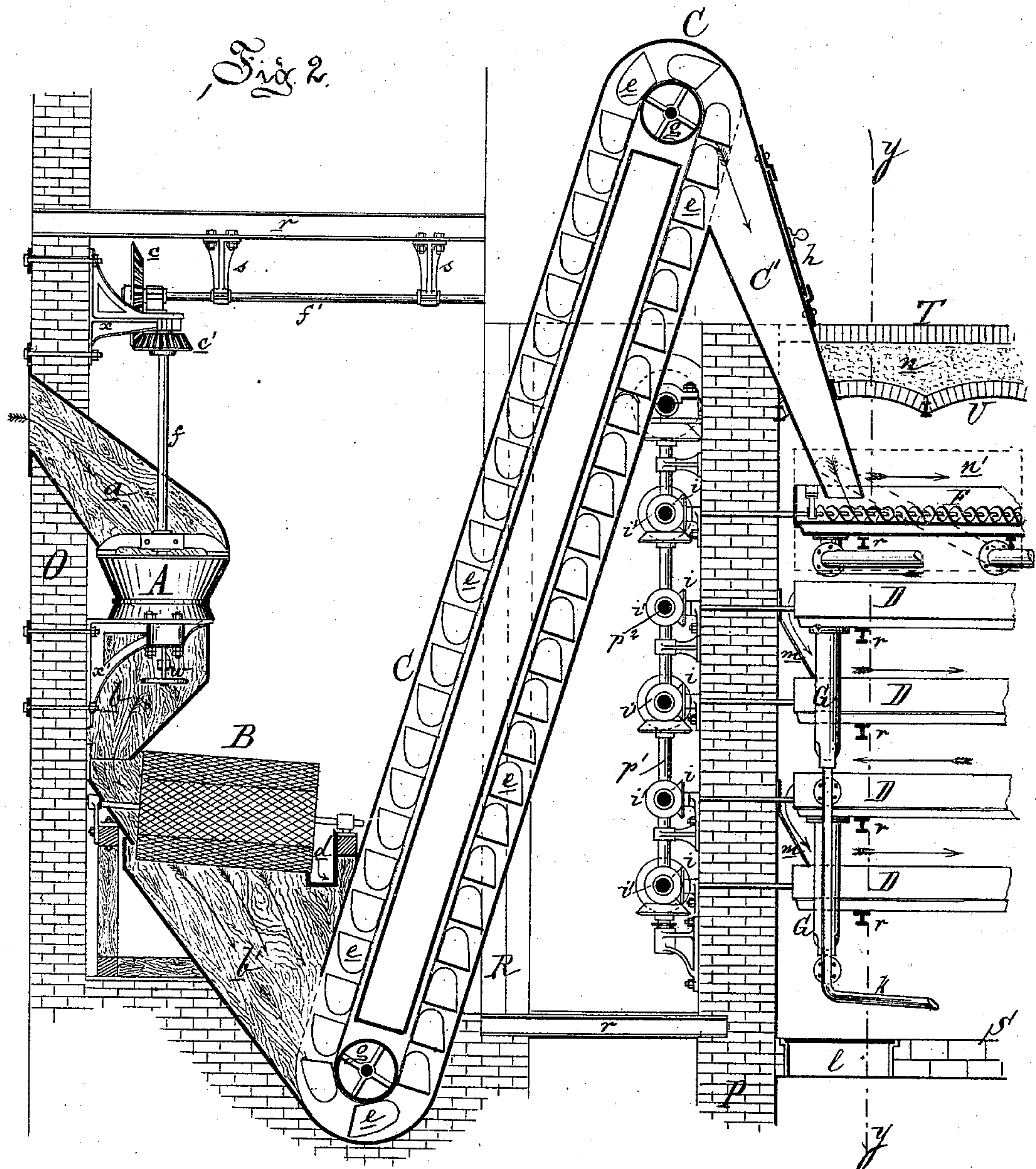
Attest:  
A. S. Sprague  
Thos. B. Day

Inventor:  
Albrecht Edward Barthel.

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Thos. S. Day*

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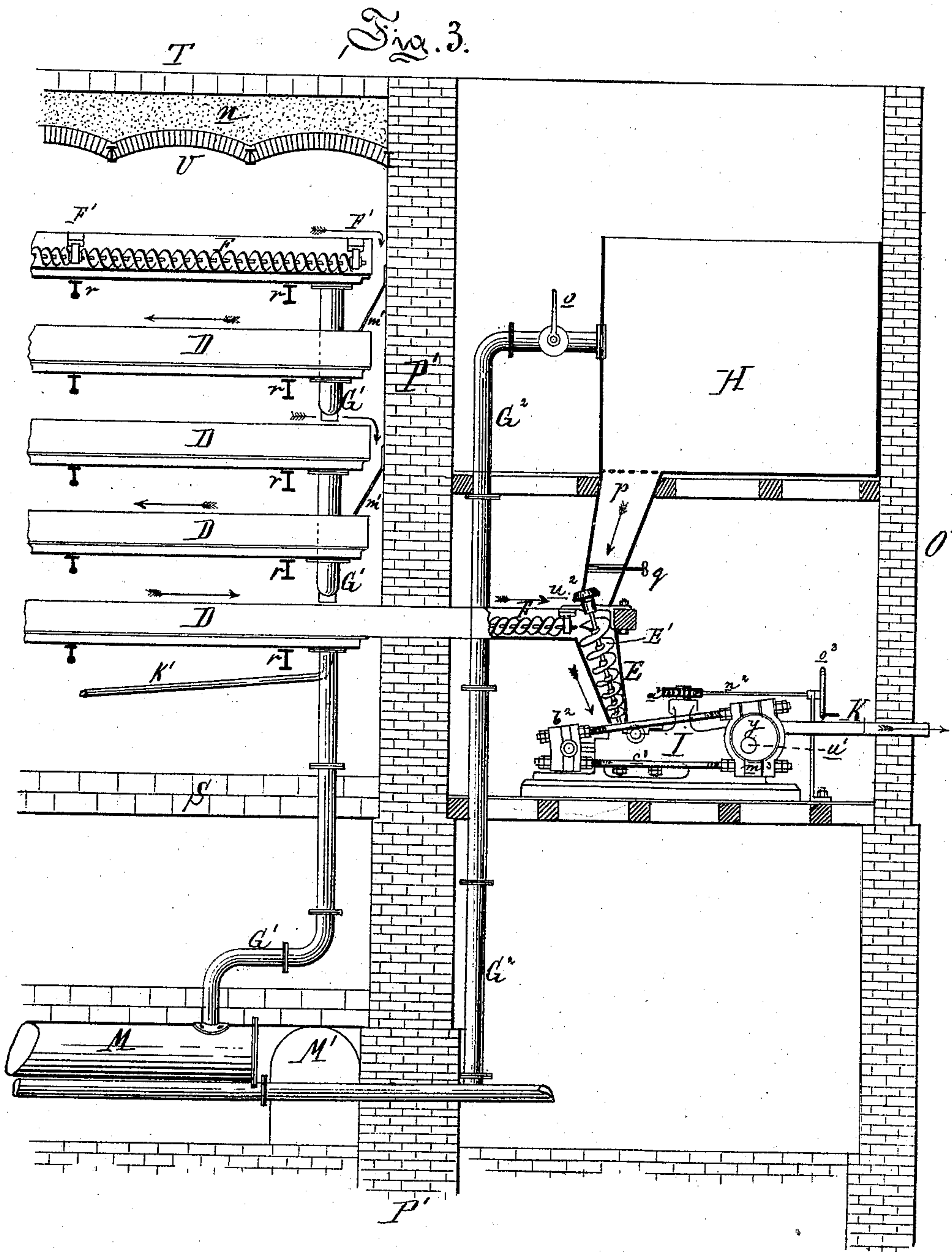
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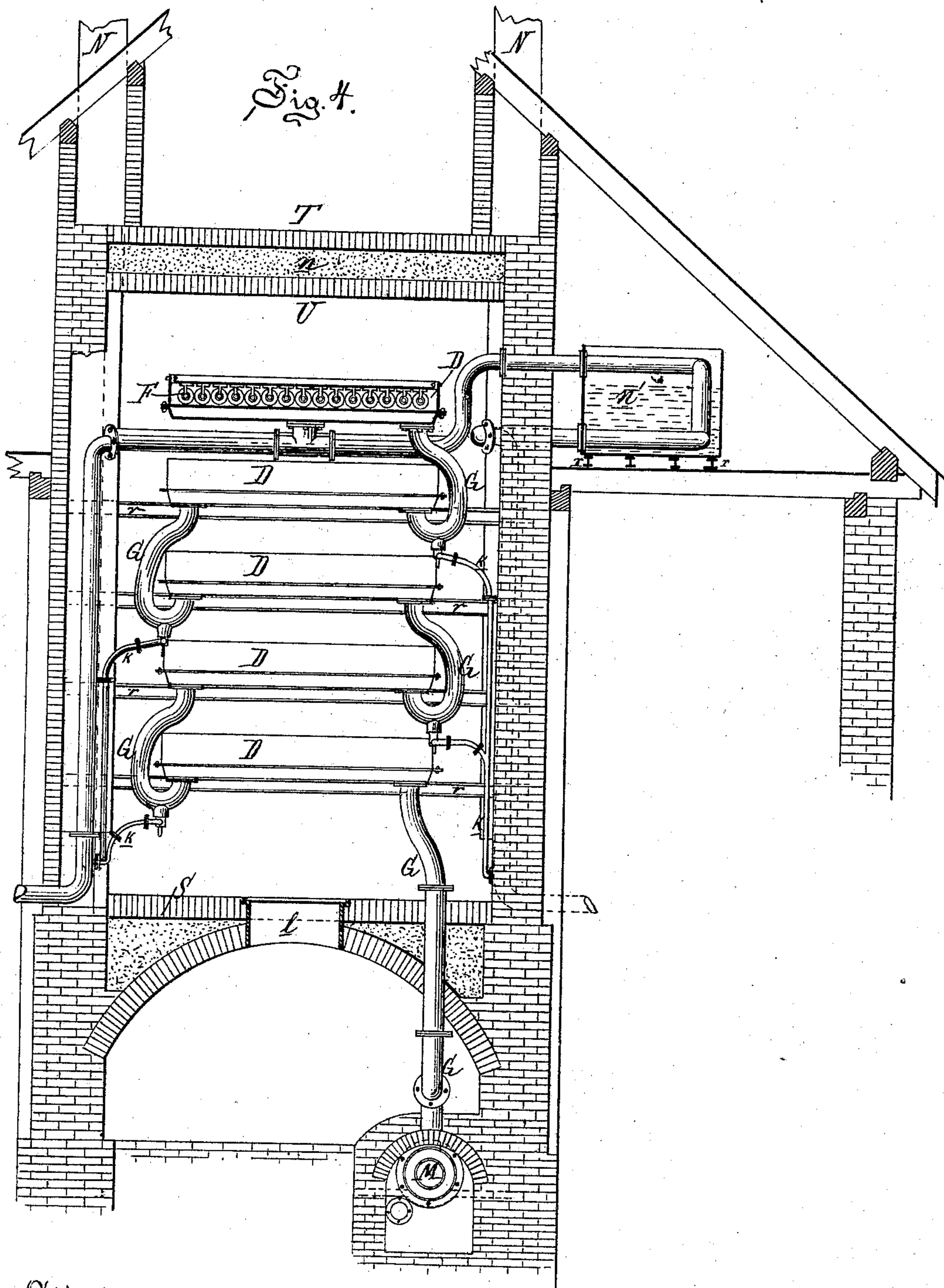
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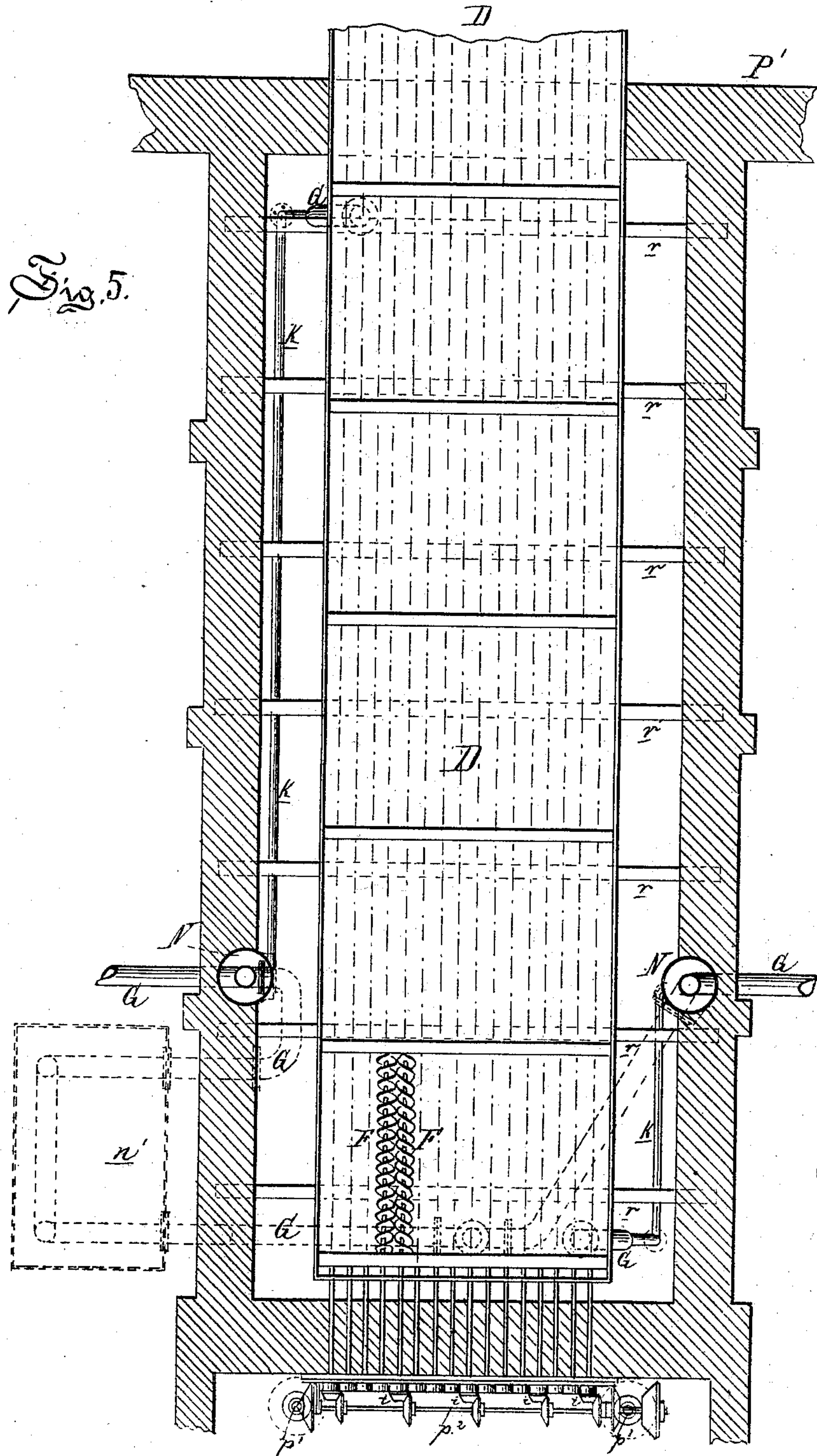
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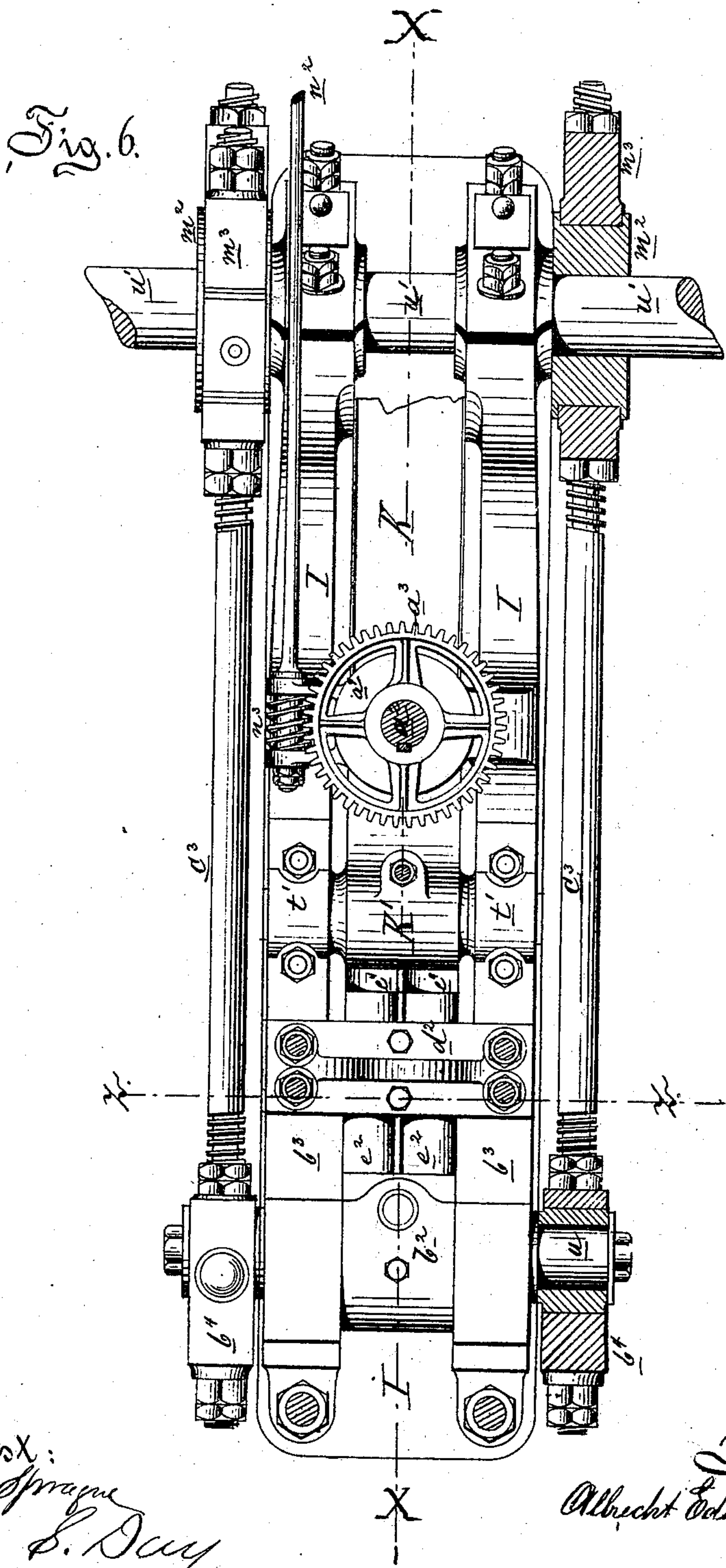
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In witness whereof:  
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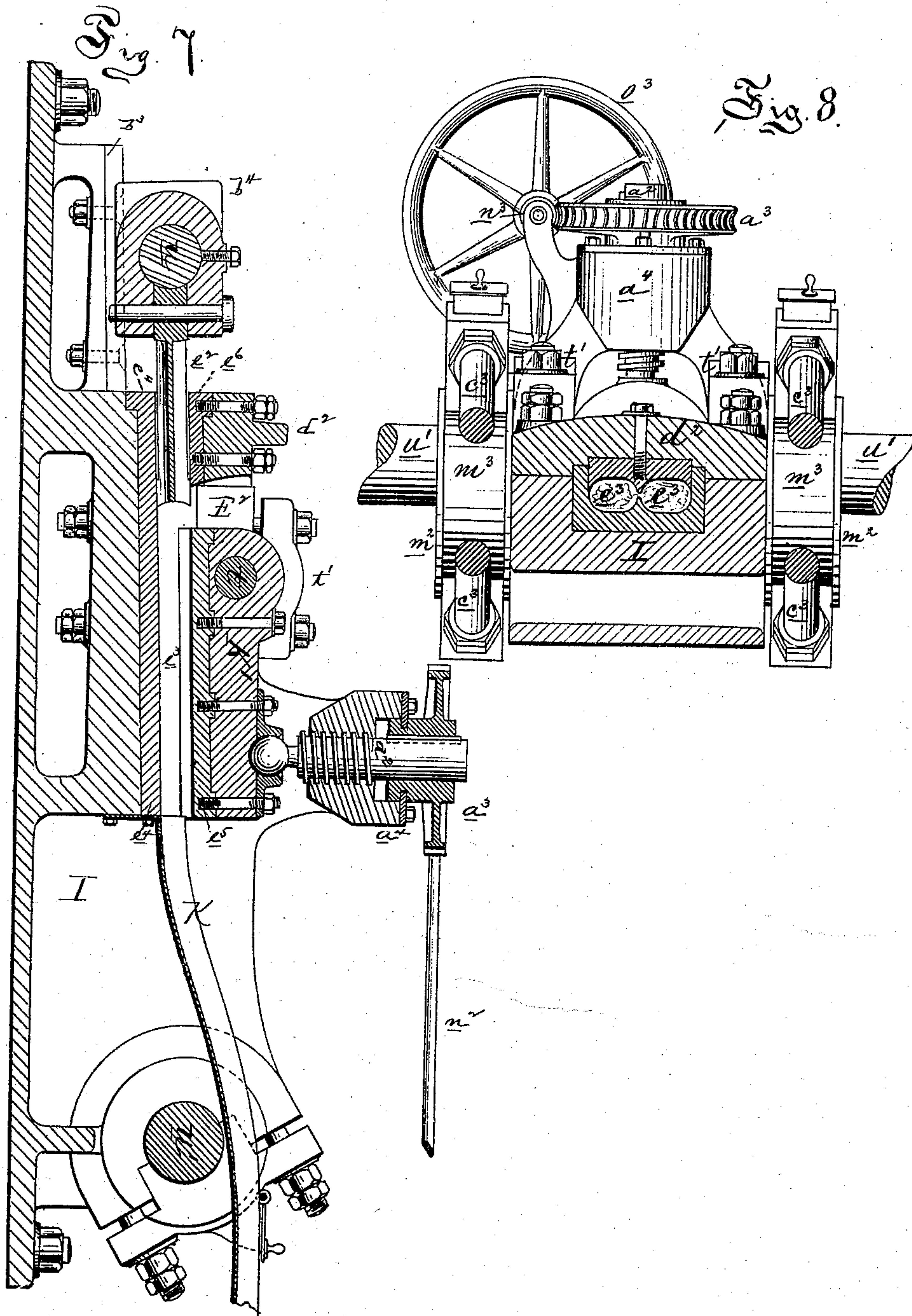




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# UNITED STATES PATENT OFFICE.

ALBRECHT EDWARD BARTHEL, OF DETROIT, MICHIGAN.

## IMPROVEMENT IN PEAT-MACHINES.

Specification forming part of Letters Patent No. 171,210, dated December 21, 1875; application filed September 27, 1875.

*To all whom it may concern:*

Be it known that I, ALBRECHT EDWARD BARTHEL, of the city of Detroit, county of Wayne and State of Michigan, have invented a new and useful Improvement in Peat-Machines, of which the following is a specification:

The nature of my invention relates to the machinery for pulverizing, sifting, drying, and compressing the peat, thereby preparing the peat for use in furnaces, and also to the process of manufacturing the peat for use, and also to mixing the peat with coal-oil, tar, or other resinoid substances, to give it a greater consistency and a higher heating power; and it consists in providing a mill for grinding the peat to any suitable fineness, and then passing the same through a sifting-reel to separate the peat from such foreign substances as may be mixed with it in its natural condition, and then in providing means for drying the peat, and then of mixing the peat with coal-oil, coal-tar, or other resinoids, and then compressing the peat, either alone or in combination with other substances, and delivering the same in a solid form for use for fuel.

In the drawings the same letters indicate like parts.

Figure 1, Sheet 1, is a vertical section through the length of the machine. Fig. 2, Sheet 2, is an enlarged vertical section of the first half of the machine. Fig. 3, Sheet 3, is an enlarged vertical section of the last half of the machine. Fig. 4, Sheet 4, is a vertical cross-section of the machine at  $y y$  in Fig. 1. Fig. 5, Sheet 5, is a plan of the lowest drying-pan, showing the conveyers for moving the peat. Fig. 6, Sheet 6, is a plan view of the press. Fig. 7, Sheet 7, is a longitudinal vertical section of the press on the line  $x x$  in Fig. 6. Fig. 8, Sheet 7, is a cross-section of the press on the line  $z z$  in Fig. 6.

In the drawings, A represents a mill for grinding the peat, which may be of any convenient construction. The peat is fed into this mill A through a spout or hopper,  $a$ . The revolving cylinder of the mill is driven by the shaft  $f$ , upon which is placed the spur-gearing  $c^1$ , which meshes into the spur-gearing  $c$  on the driving-shaft  $f'$ , which is driven by any suitable connection. The mill A is provided

with a screw and hand-wheel,  $w$ , to regulate the set of the grinding cylinder or cone.  $x x'$  are brackets for supporting the mill and the driving-shafts.  $b$  is the receptacle for the ground peat, and the passage from the mill to the bolting-reel B, where the peat is separated from the refuse, and drops down into the receptacle  $b^1$ , while the refuse passes out at the spout  $d$ . C is the elevator, passing over the pulleys  $g g$ , and having cups  $e$  for elevating the peat, which, when elevated, is emptied into the spout  $C'$ , provided with an opening, with a slide covering it at  $h$ , and dropped into the drying-pans D, which are provided with a double bottom, inclosing an air-tight space, in which is circulated steam or hot air introduced through the pipe G. When steam is used for drying the peat the condensed water is returned to the boiler through the pipe  $k$ . For the purpose of distributing the peat, and keeping it in motion while drying, the pans D are provided with the screw-conveyers F, which are driven by the spur-gearing  $i'$  on the horizontal shaft  $p^2$ , which is driven by suitable gearing on the vertical shaft  $p^1$ , which, in turn, is driven by any convenient connection. These screw-conveyers F are arranged to work alternately to the right and left, thereby conveying the peat from one end of the pans to the other, where it is dropped onto the chute  $m^1$ , which passes it onto the next pan, and so on through the necessary number of pans to complete the drying process. From the last pan in the series the peat is conveyed to the conical endless screw  $E^1$ , which, while it passes the peat through the hopper E, also condenses it, and delivers it in a continuous solid bar or stream to the entrance of the press I. The conical endless screw is driven by a spur-gearing,  $u^2$ , on its upper end, connected with the main shaft  $u$  by the necessary shaft and gearing. H is a reservoir for containing coal-screening, coal-tar, or other substances to be mixed with the peat. This reservoir H connects with the hopper E by the spout  $p$ , in which is fitted the slide  $q$ , for the purpose of closing the spout  $p$  when not in use, or to regulate the flow of the material to be mixed with the peat as required. The reservoir H is heated by steam or hot air, conveyed from the boiler through the pipe  $G^2$ , which is closed,



when not used, by the valve *o*. The mixture of the peat with the coal-tar or other substances is made while the peat and coal-tar are heated, and the mixture is, therefore, more complete and intimate than it would be if the peat was cold.

In the passage through the hopper *E* and the conical endless screw *E*<sup>1</sup> the peat and the added material are forced into close contact, and pass from the hopper to the pressing-machine *I*, Figs. 7 and 8. At the opening *E*<sup>2</sup>, between the head-piece *K*' and the bridge-piece *d*<sup>2</sup>, this opening *E*<sup>2</sup> extends downward to the bed-piece *e*<sup>4</sup>, which forms the bottom of the ways through which the piston *e*<sup>2</sup> reciprocates. This piston *e*<sup>2</sup> is connected at its outer end to the cross-head *b*<sup>2</sup>, which reciprocates on the ways *b*<sup>3</sup>, and the cross-head *b*<sup>2</sup> is connected, by journals *u*, to the connecting-rod *c*<sup>3</sup> by the boxes *b*<sup>4</sup>. The connecting-rod *c*<sup>3</sup> has at its other extremity a ring, *m*<sup>3</sup>, which incloses the eccentric *m*<sup>2</sup> on the main shaft of the machine, *w*<sup>1</sup>, which is connected directly with the engine. The piston *e*<sup>2</sup> is guided in its reciprocations by the under ways *e*<sup>4</sup>, and by the upper guides or way *e*<sup>6</sup>, which is held in place by the bridge-piece *d*<sup>2</sup>. *K*' is a swage-block, which vibrates on the journal *t* on its inner end, the journal *t* working in journal-boxes *t*'. The vibration of the swage-block *K*' is governed by the set-screw *a*<sup>2</sup>, which is connected with the swage-block *K*' by a ball-and-socket joint. The set-screw *a*<sup>2</sup> passes through a thread cut in the bridge-piece *a*<sup>4</sup>, and is turned by means of the toothed wheel *a*<sup>3</sup>, which meshes into the endless screw *n*<sup>3</sup> on the shaft *n*<sup>2</sup>, which is rotated by means of the hand-wheel *o*<sup>3</sup>. When the peat is dropped into the opening *E*<sup>2</sup> the forward movement of the piston *e*<sup>2</sup> forces a portion forward into the channel between the bed-piece *e*<sup>4</sup> and the under side of the swage-block *K*', which channel gradually contracts toward its outer end, thereby compressing the peat into a hard solid body, which is forced out of the machine onto the ways or trough *K*' ready for use. In passing from the trough *K*' the peat, as it passes beyond the end of the trough, breaks off in pieces, as at *L*<sup>2</sup>, fit for handling or storage.

I am aware that peat in a cold state has been mixed with coal-tar and refuse coal, and other substances, but never in a hot state.

I claim—

1. In a peat-machine, and in combination, a grinding-mill, *A*, a bolting-reel, *B*, and an intermediate receptacle, *b*, constructed and arranged substantially as and for the purposes set forth.

2. In a peat-machine, and in combination, a grinding-mill, *A*, an intermediate receptacle, *b*, a bolting-reel, *B*, and a receptacle, *b*<sup>1</sup>, connecting said reel with the entrance end of a conveyer-spout, the parts named being arranged one above the other, substantially as and for the purposes set forth.

3. The series of double-bottomed pans *D*, arranged one above the other, in combination

with the conveyer *F*, the pipe *G*, substantially as and for the purposes set forth.

4. The combination of the mill *A*, bolting-reel *B*, the elevator *C*, the pans *D*, and conveyers *F*, substantially as described.

5. In combination, the conical hopper *E*, the conical endless screw *E*<sup>1</sup>, and the conveyer *F*, substantially as and for the purposes set forth.

6. The combination of the mill *A*, the bolting-reel *B*, the elevator *C*, the drying-pans *D*, the conveyers *F*, with the conical hopper *E*.

7. The combination of the mill *A*, bolting-reel *B*, elevator *C*, drying-pans *D*, conveyer *F*, conical hopper *E*, with the conical endless screw *E*<sup>1</sup>.

8. The combination of the steam-pipe *G*<sup>2</sup>, reservoir *H*, pipe *p*, with the conical hopper *E* and the conical endless screw *E*<sup>1</sup>, substantially as described.

9. The combination of the swage-block *K*', the bed-piece *e*<sup>4</sup>, the set-screw *a*<sup>2</sup>, with the bridge-piece *a*<sup>4</sup>, substantially as described.

10. The combination of the main shaft *w*<sup>1</sup>, the eccentric *m*<sup>2</sup>, the connecting-rod *c*<sup>3</sup>, the cross-head *b*<sup>2</sup>, the piston *e*<sup>2</sup>, and the guides *e*<sup>6</sup> and *e*<sup>4</sup>, substantially as described.

11. The combination of the swage-block *K*', the bridge-piece *d*<sup>2</sup>, with the frame *I* and the bed-piece *e*<sup>4</sup>, substantially as described.

12. The combination of the frame *I*, the swage-block *K*', the bed-piece *e*<sup>4</sup>, the main shaft *w*<sup>1</sup>, the eccentric *m*<sup>2</sup>, the connecting-rod *c*<sup>3</sup>, the cross-head *b*<sup>2</sup>, the piston *e*<sup>2</sup>, the guides *e*<sup>4</sup> and *e*<sup>6</sup>, the bridge-piece *d*<sup>2</sup>, substantially as described.

13. The combination of the conical hopper *E*, the conical screw *E*<sup>1</sup>, with the swage-block *K*', the bridge-piece *d*<sup>2</sup>, the main shaft *w*<sup>1</sup>, the eccentrics *m*<sup>2</sup>, the connecting-rod *c*<sup>3</sup>, the cross-head *b*<sup>2</sup>, the piston *e*<sup>2</sup>, and the guides *e*<sup>4</sup> and *e*<sup>6</sup>, substantially as described.

14. The combination of the mill *A*, bolting-reel *B*, the elevator *C*, the drying-pan *D*, with the conveyers *F*, the conical hopper *E*, with the conical endless screw *E*<sup>1</sup>, the main frame *I*, the swage-block *K*', the bridge-piece *d*<sup>2</sup>, the bed-piece *e*<sup>4</sup>, the main shaft *w*<sup>1</sup>, the eccentrics *m*<sup>2</sup>, the connecting-rod *c*<sup>3</sup>, the cross-head *b*<sup>2</sup>, the piston *e*<sup>2</sup>, the guides *e*<sup>6</sup> and *e*<sup>4</sup>, substantially as described.

15. The combination of the mill *A*, bolting-reel *B*, the elevator *C*, the drying-pans *D*, with the conveyers *F*, the reservoir *H*, the steam or hot-air pipes *G*<sup>2</sup>, the hopper *p*, the conical hopper *E*, with the conical endless screw *E*<sup>1</sup>, the main frame *I*, the swage-block *K*', the bridge-piece *d*<sup>2</sup>, the bed-piece *e*<sup>4</sup>, the main shaft *w*<sup>1</sup>, the eccentric *m*<sup>2</sup>, the connecting-rod *c*<sup>3</sup>, the cross-head *b*<sup>2</sup>, the piston *e*<sup>2</sup>, the guides *e*<sup>6</sup> and *e*<sup>4</sup>, the bridge-piece *a*<sup>4</sup>, the set-screw *a*<sup>2</sup>, the journal *t*, substantially as described.

ALBRECHT EDWARD BARTHEL.

Witnesses:

H. S. SPRAGUE,  
CHAS. J. HUNT.