

No. 744,133.

PATENTED NOV. 17, 1903.

H. UNTIEDT.
SELF ACTING MECHANICAL STOKER.
APPLICATION FILED DEC. 29, 1902.

NO MODEL.

Fig. 1.

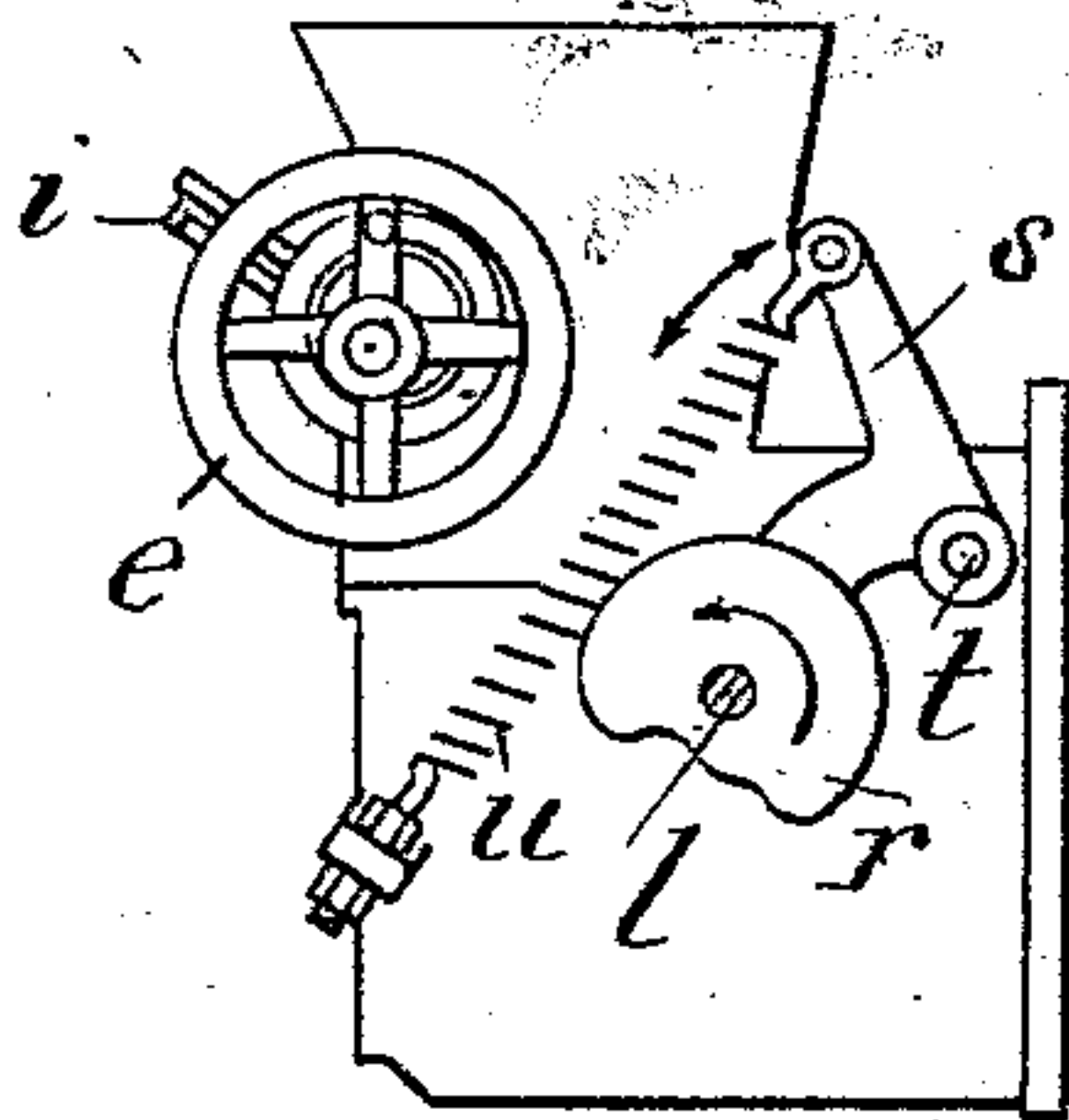


Fig. 2.

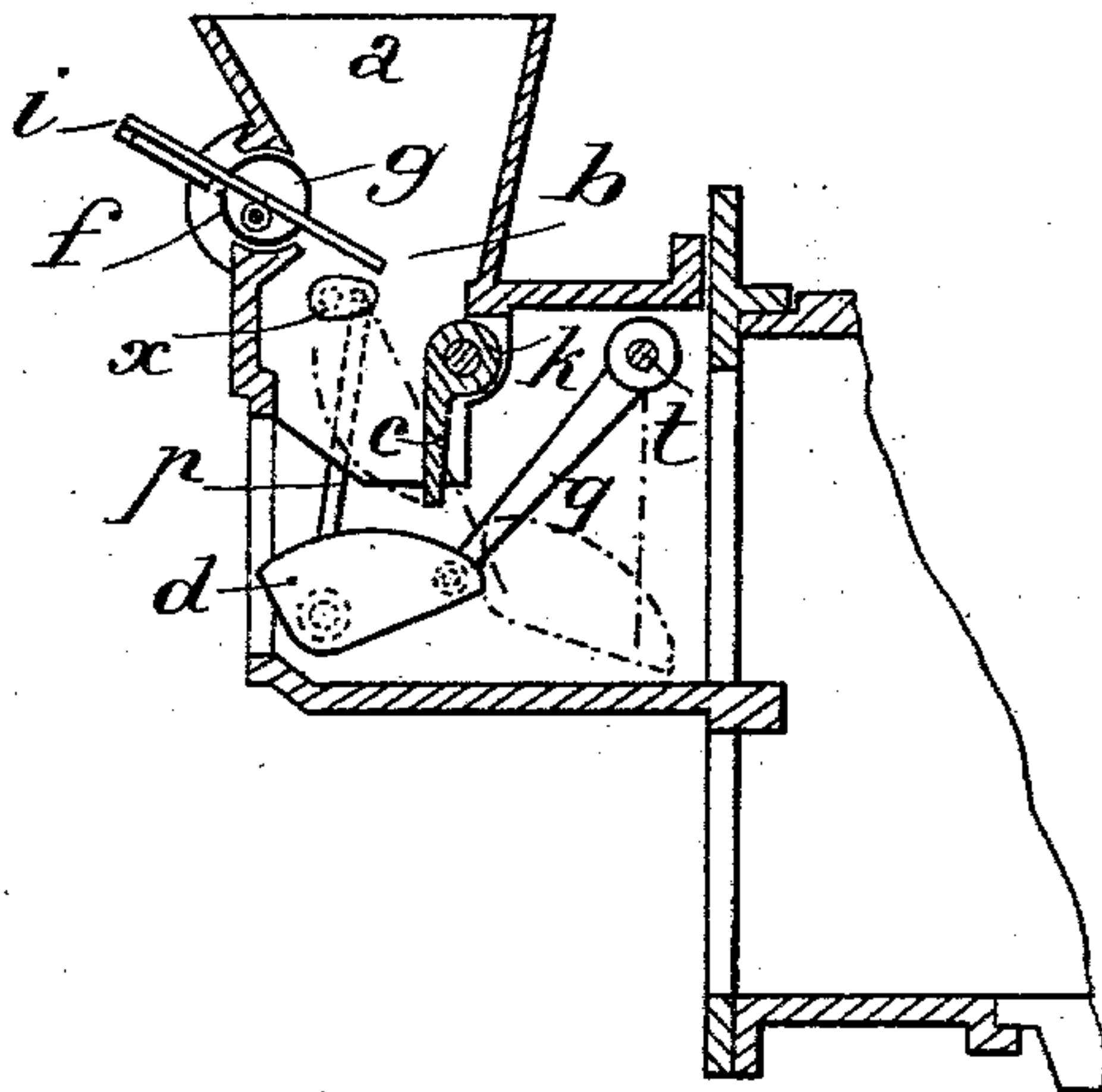


Fig. 3.

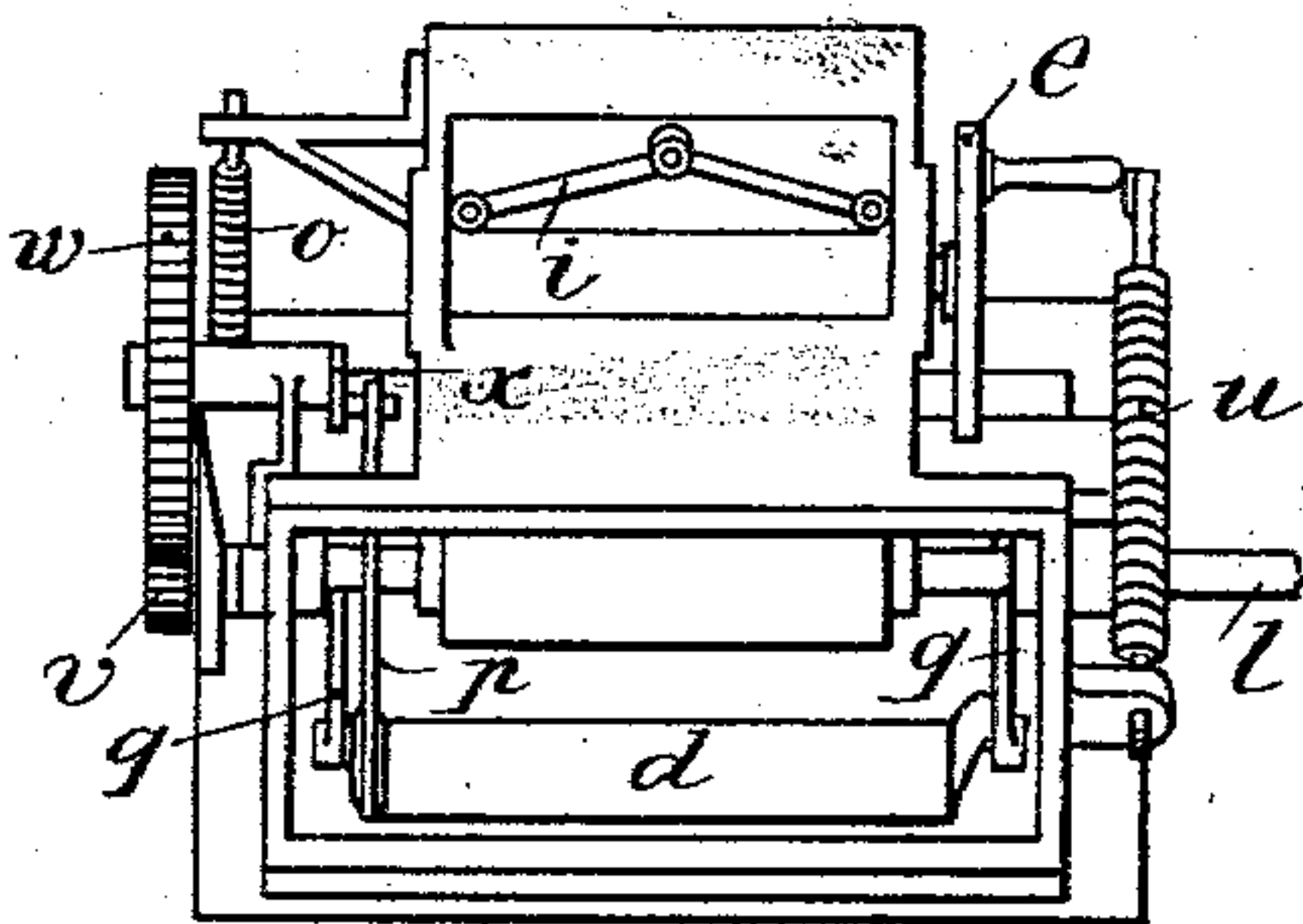


Fig. 4.

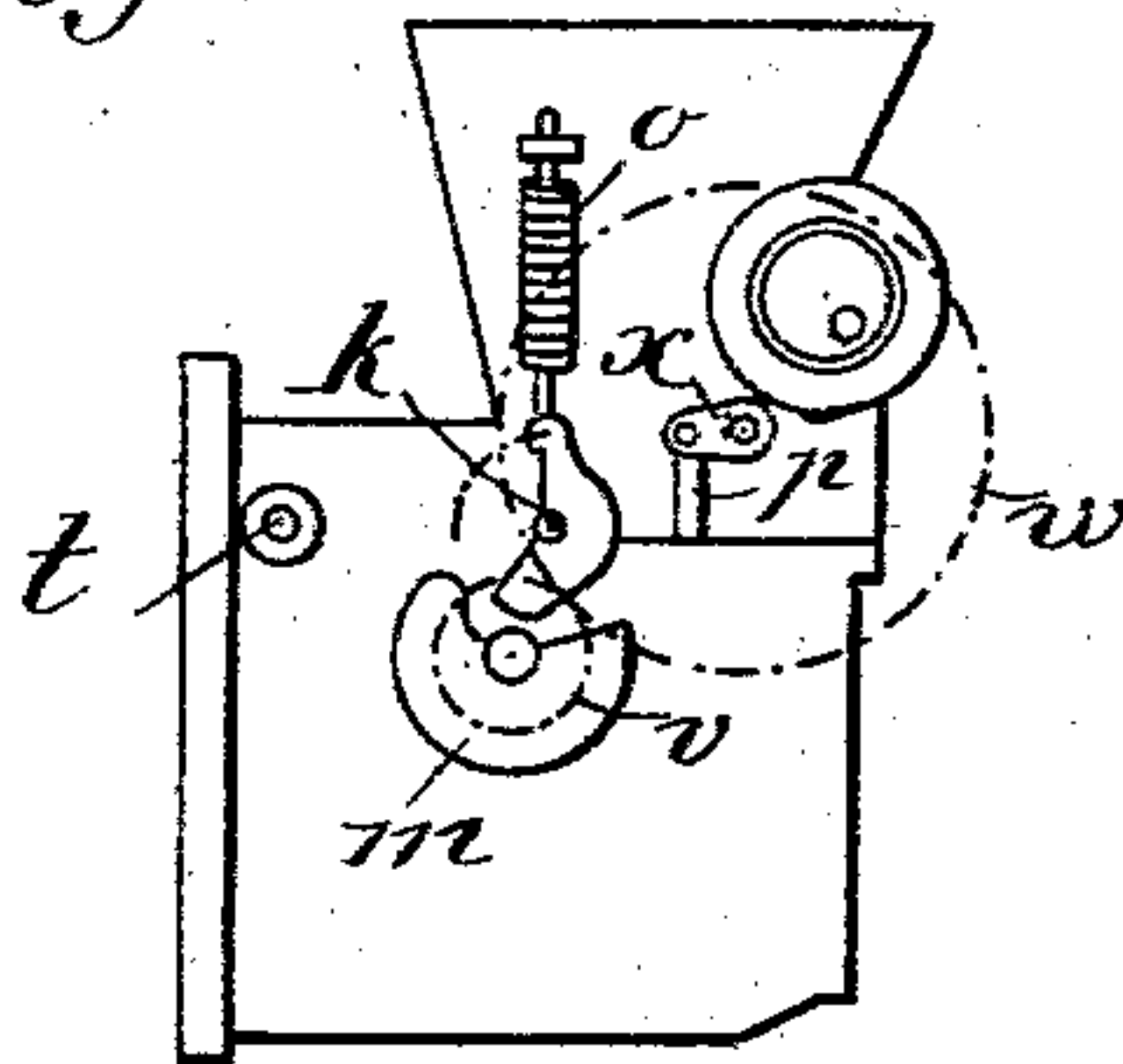
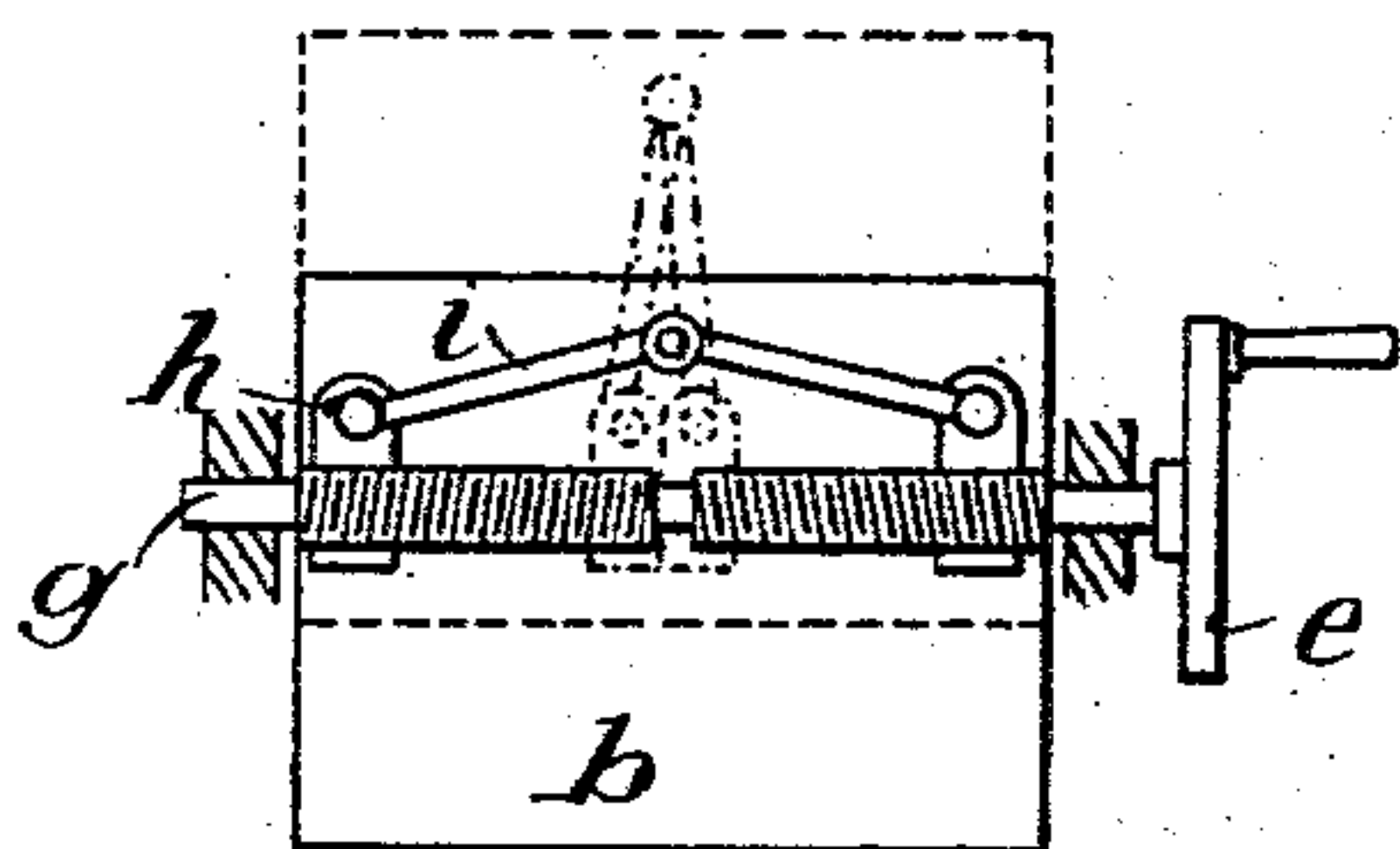


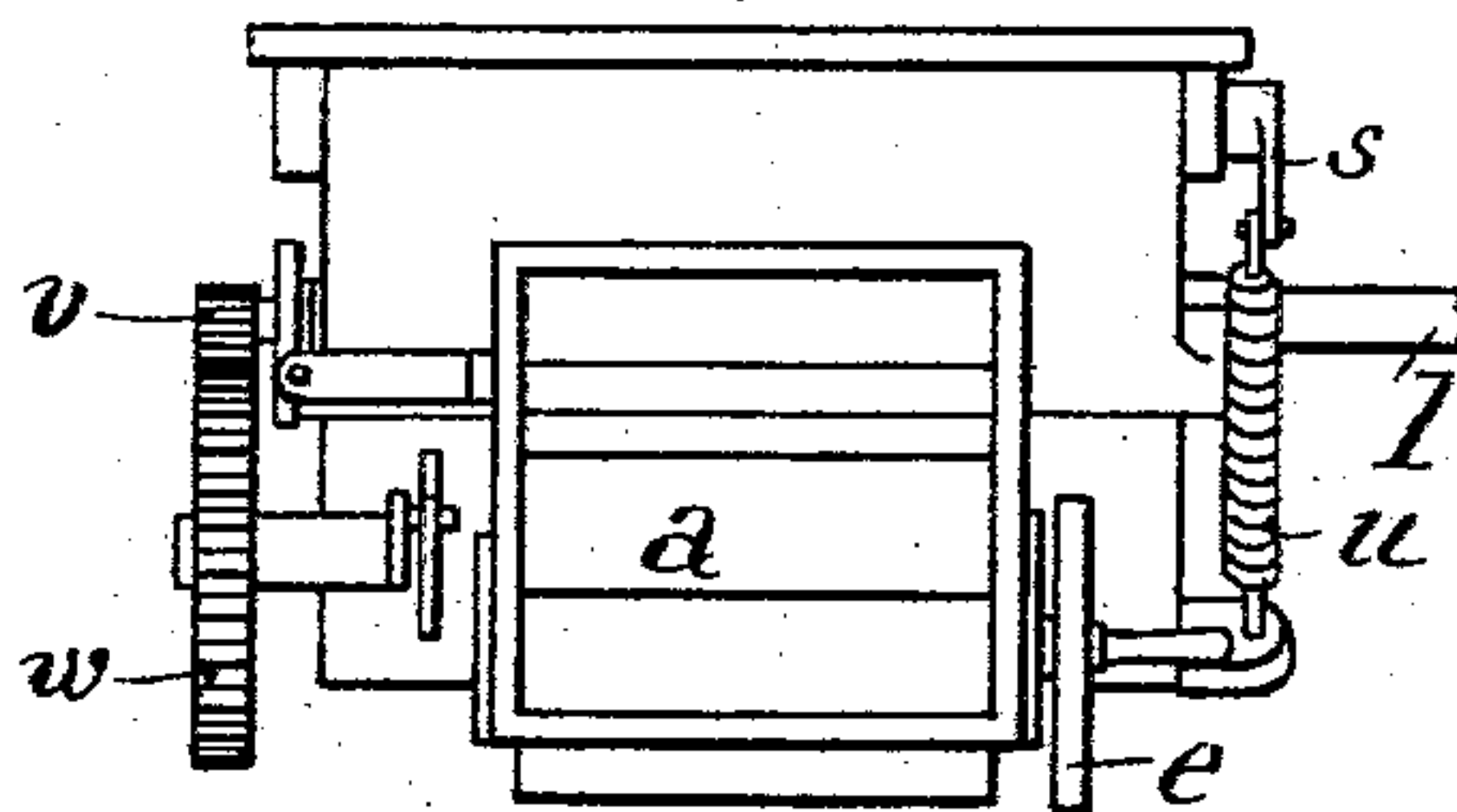
Fig. 5.



WITNESSES

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Fig. 6.



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HEINRICH UNTIEDT, OF SCHWEINFURT, GERMANY.

SELF-ACTING MECHANICAL STOKER.

SPECIFICATION forming part of Letters Patent No. 744,133, dated November 17, 1903.

Application filed December 29, 1902. Serial No. 137,025. (No model.)

To all whom it may concern:

Be it known that I, HEINRICH UNTIEDT, a subject of the Emperor of Germany, residing at Schweinfurt, Germany, have invented certain new and useful Improvements in Mechanical Stokers, of which the following is a specification.

The present invention has reference to a self-acting mechanical stoker for furnaces of all kinds, with horizontal or slightly-inclined grates. By this apparatus the stone or powder fuel is spread over the grate uniformly in a regular layer, which is an essential feature for an economical combustion. In general, the apparatus hitherto used for this purpose necessitates a fuel in bits or stones of regular sizes and may scarcely be used with a powder or dust fuel. The spreading of the fuel over the grate by means of the apparatus now existing has also been found very defective. Such defects are avoided by the present invention, which is shown in different views in the annexed drawings, in which—

Figure 1 is a side elevation of the apparatus; Fig. 2, a sectional view; Fig. 3, a front view; Fig. 4, the other side elevation; Fig. 5, a detail view, and Fig. 6 a plan view thereof.

The apparatus consists, essentially, in a fuel-feeding device and a shoveling device for throwing the fuel on the grate.

The feeding device comprises a hopper *a*, Figs. 2 and 6, a valve *b*, and a pivoted bottom *c*. By the feed device the fuel is delivered in quantities that can be regulated as desired to the charging-shovel *d*, arranged underneath the same. The regulation is accomplished by causing the valve *b* to move backward and forward by means of a hand-wheel *e*—that is, by opening more or less the inlet-passage of the fuel. This is effected in the following manner: The valve or slide *b* is guided through a tube *f*, slotted at both sides, which is pivoted in the side walls of the hopper, so as to rock therein and oscillate about its axis.

Within the tube *f* is a shaft *g*, threaded to the right at one end and to the left at the other, Figs. 2 and 5, on which is fixed the hand-wheel *e*, previously referred to. Upon this shaft are two nuts *h*, Fig. 5, having bored lugs connected by the levers *i* with the valve *b*. Now should the shaft *g* be turned

by the hand-wheel *e* the nuts will move and through the levers *i* will cause the valve *b* to move backward or forward, according to the direction of rotation of the threaded shaft, as shown by the dotted lines in Fig. 5. After the device has been adjusted it does not require any stopping means, as it is self-fixing. The bottom *c*, Fig. 2, is pivoted on the axis *k*, Figs. 2 and 4, and its two end positions are shown in Fig. 2. Should the bottom be hanging downward, the fuel will be allowed to drop from the hopper *a* through the aperture left open by the valve *b* until the said aperture has been reduced by the lifting up of the bottom. It is sufficient to bring the bottom to the horizontal position to stop the further dropping of the fuel without touching the valve *b*. Should a bit of coal be pressed between the valve and the bottom when bringing the latter to its horizontal position, the valve *b* will yield under the pressure of the bottom without smashing the said bit of coal, which will drop again under the weight of the coal above it when the bottom *c* is lowered to its initial position.

The feeding device works in such a manner that the coal bits or dust may be fed to the charging-shovel below without having either to crush or to grind it down, partly or wholly.

The bottom *c* receives its oscillating motion from a cam *m*, Fig. 4, keyed upon the shaft *l*, Figs. 2 and 4, and from the lever *n*, fixed on the axis *k*. The spring *o* by acting upon this lever facilitates this motion.

The charging-shovel *d*, Figs. 2 and 3, is suspended from arms *p* and *q* and may oscillate to the position shown in dotted lines, whereby the fuel lying in the way of the shovel is thrown on the grate. The spring *u*, which insures the motion of the shovel *d*, is bent by the cam *r*, Fig. 1, keyed on the axis *l*, through a friction-lever *s*, which is fixed on the axis *t*, upon which are also keyed the arms *q*. The tension of the spring *u* does not act during the whole stroke of the friction-lever *s*, but only acts during the half of it, whereafter the tension of attraction at the beginning is converted into a tension of pressure. Thus the throwing motion of the shovel *d* is limited by the spring *u* itself. Of course the spring will have to be made and arranged

so as to answer these requirements. The point of fixation of the spring *u* may be adjustable, so as to enable to operate the shovel at a low or high speed.

5 Upon the axis *l* is secured a pinion *v*, meshing with a toothed wheel *w*, Figs. 3, 4, and 6. On the axis or shaft of this toothed wheel *w* is fixed either an eccentric or crank *x*, Figs. 3, 4, and 6, the stroke of which may
10 also be varied, the length of the hanging rod *p* varying as well, although it has been shown as not varying to simplify the illustration. The suspension-rod *p* of the shovel
15 *d* is held by this crank or eccentric and is moved up and down by the latter when the apparatus is working. The charging-shovel receives thereby a different motion at each stroke, although the tension of the operating-spring remains the same. By this arrange-
20 ment the fuel may be thrown and spread all over a grate of any size, the only fact to observe being to choose a suitable relation between the gears *v* and *w* and to adjust the length of the hanging rod *p* and the radius
25 of the crank or eccentric.

The shaft *l*, which produces all the movements in the apparatus, is set to rotation by a transmission through a set of gear.

I claim—

1. In a mechanical stoker, the combination 30 with a hopper, a pivoted bottom therefor, means for operating said bottom and an oscillating shovel beneath said hopper, of arms secured at one end to the rear of said shovel and at the other end to an eccentric and arms 35 secured at one end to the front of said shovel and at the other end to a cam-operated shaft, substantially as described.

2. In a mechanical stoker, the combination with a hopper, a pivoted bottom therefor, 40 cam-operated means for controlling said bottom and a shovel suspended beneath said hopper, of a slide-valve carried by a rotatable bearing, substantially as described.

3. In a mechanical stoker, the combination 45 with a hopper, a movable bottom therefor and a shovel suspended beneath said hopper, of a rotatable bearing in said hopper, a slide mounted in said bearing and screw-controlled means for operating said slide, substantially 50 as described.

In testimony whereof I affix my signature.
HEINRICH UNTIEDT.

In presence of—

G. BARDEL,
H. BARDEL.