

No. 692,605.

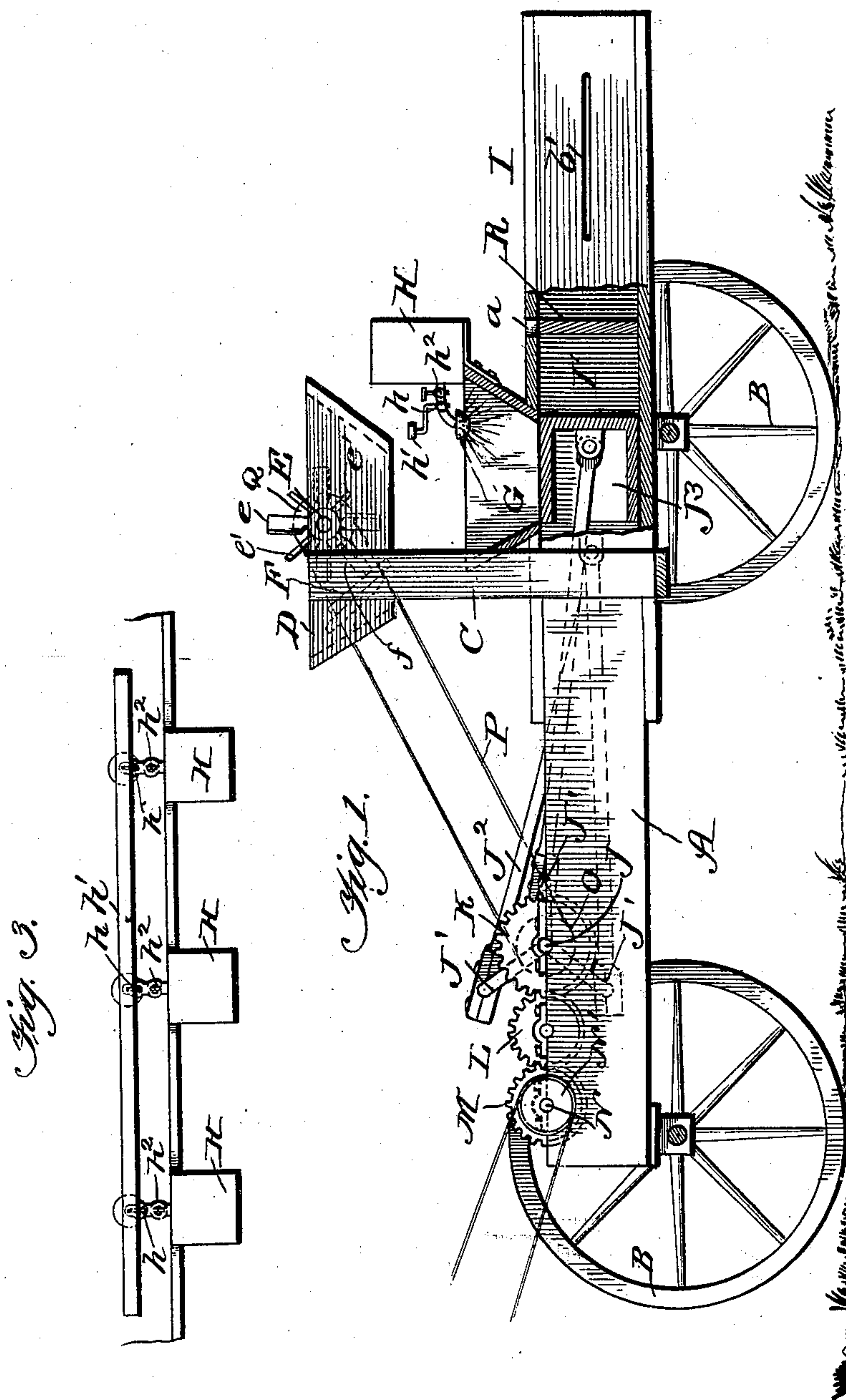
Patented Feb. 4, 1902.

M. L. BRATTON.  
ARTIFICIAL FUEL COMPRESSOR.

(Application filed May 9, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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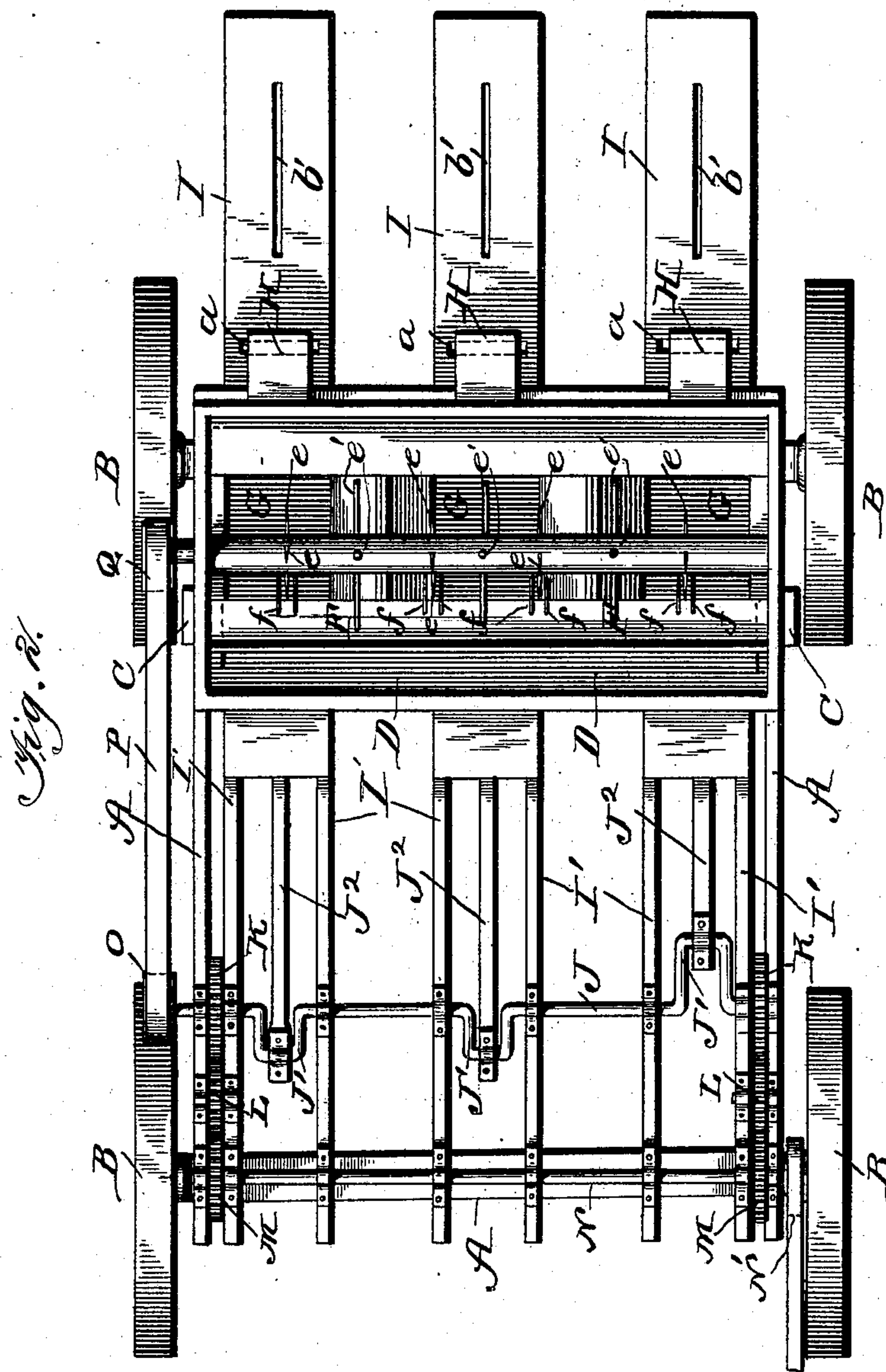
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# UNITED STATES PATENT OFFICE.

MARCUS L. BRATTON, OF LURAY, KANSAS.

## ARTIFICIAL-FUEL COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 692,605, dated February 4, 1902.

Application filed May 9, 1901. Serial No. 59,397. (No model.)

*To all whom it may concern:*

Be it known that I, MARCUS L. BRATTON, of Luray, in the county of Russell and State of Kansas, have invented a new and useful Improvement in Artificial-Fuel Compressors, of which the following is a specification.

My invention is in the nature of a machine for preparing and compressing into bales an artificial fuel composed of straw and crude petroleum.

In the West, where wood is scarce and coal is high, there is a demand for a cheap fuel. The wheat-fields of the West supply an abundance of straw, much of which is allowed to go to waste, and in recent years petroleum suitable for fuel has been found in large quantities. Straw when compressed does not burn well, but has a tendency to smother, while petroleum requires a special form of stove or furnace. My invention contemplates the combining of straw and crude petroleum to form an artificial and portable fuel, which may be formed in small bales of six to eight inches square and which may be burned in any kind of a stove or furnace.

My invention consists in a special form of machine for preparing the straw, mixing the oil therewith, and compressing it into bales, which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section. Fig. 2 is a plan view, and Fig. 3 is a detail plan view of the oil-reservoirs.

In the drawings, A represents a rectangular framework, which is mounted at its four corners upon running-wheels B, which travel upon the ground and by which the machine may be easily transported from place to place. On the horizontal framework is mounted by standards C C a trough-shaped receptacle D, into which the straw is fed and in which it is cut into short lengths that better adapt it to be mixed with the oil and compressed into bales. In this trough is arranged longitudinally a horizontal shaft E, journaled in bearings in the ends of the trough and armed at regular intervals with cutter-blades *e*, with spikes *e'* alternating with and placed between the sets of cutter-blades. Inside the hopper upon suitable supports at the end is held a bed-plate F, having at intervals correspond-

ing to the spacing of the cutter-blades pairs of knives *f f*, projecting upwardly and in range of the revolution of the cutter-blades, which cutter-blades pass between the two knives *f f* of each pair and cut the straw into suitable lengths for the purposes of my invention. As the straw is cut into lengths it is forced down by the spikes *e'* into a series of subjacent hoppers G G G, which discharge at the bottom into a corresponding series of baling-presses. On one side of each hopper G there is arranged a reservoir H for crude petroleum, which has an outlet stop-cock *h* for delivering in a regulated stream a definite quantity of oil into the chopped straw entering the press-chamber. These stop-cocks are provided with spray-nozzles and are all connected for simultaneous operation in opening or closing by a swinging bar *h'*, Fig. 3, and have besides an individual cut-off valve *h''*, by which any one of the reservoirs may be thrown out of action.

The baling-presses consist each of a box or casing I, square or rectangular in cross-sections, made of any suitable material, and projecting at its delivery end beyond the framework A. These press-boxes have their sides prolonged at I' to form bearings for a crank-shaft J, which has three cranks J', connected respectively by pitmen J<sup>2</sup> with the plungers J<sup>3</sup>, which fit within the boxes and reciprocate in the same to press the straw. In the top of each box just beyond the hopper there is a transverse slot *a*, through which a division-board R is inserted to separate the compressed material into bales and which is pushed out of the delivery end of each box with the bale after the latter is tied. In the top and sides of the box just beyond the transverse slot *a* there are longitudinal slots *b' b'*, through which the bale-band is inserted and tied around the bale to hold it in permanent shape. Such band is made of cord or rope, so as to be combustible.

In connecting the pitmen J<sup>2</sup> of the plungers to the cranks J the latter are disposed at about one hundred and twenty degrees to each other. The object of this is as follows: In compressing the straw the latter will on the backward movement of the plunger expand with an elastic force against the plunger, and I propose to utilize this backward



expansion force on one plunger to furnish power to help advance the plunger that is doing its work on the advance movement, and this result I accomplish by having a multiplicity of plunger-pitmen connected all together to the same crank-shaft, with the cranks so arranged that when one plunger is advancing another is receding and in receding transfers the expansive strain of the compressed charge of straw to the crank-shaft, and so utilizes it to turn the crank-shaft in the direction of its normal movement.

In order to prevent any torsional strain on the long crank-shaft, I positively drive the crank-shaft at both ends, and for this purpose a gear-wheel K at each end of the crank-shaft receives motion from an idler-gear L and a driving-gear M on a shaft N, which is also journaled in bearings in the side extensions of the press-boxes. This shaft N is driven by any suitable power from a belt connecting with a pulley N' on said shaft, while a band-pulley O on the crank-shaft and a belt P transmit power to a band-pulley Q on the straw-cutter shaft to actuate the cutting mechanism. When the straw saturated with petroleum has been bound into bales, it is ready for use at once without special provision for drying, as only such quantity of oil is added as will be perfectly absorbed and retained by the straw.

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

1. A machine for compressing expansible material comprising three press-boxes with corresponding plungers and pitmen-rods, a crank-shaft having three cranks between its ends set at an angle of one hundred and twenty degrees to each other, and positive driving-gears at both ends of said crank-shaft substantially as and for the purpose described.

2. A machine for compressing an artificial fuel, of fibrous material and a liquid hydrocarbon, consisting of a series of horizontal press-boxes having pressing-plungers and op-

erating mechanism, and a series of hoppers above each press-box, a corresponding series of tanks for containing the hydrocarbon arranged above and feeding into the hoppers, and a revolving cutter for the fibrous material arranged above the hoppers and discharging into the same substantially as described.

3. The combination of a series of horizontal press-boxes and plungers with pressing mechanism, a series of hoppers arranged above and feeding into the press-boxes and an elevated trough arranged above the hoppers and in crosswise relation to the press-boxes, said trough having a bed with stationary cutting-knives, and a rotating shaft provided also with cutting-knives passing between those on the bed substantially as described.

4. The combination of a series of horizontal press-boxes having plungers and pressing mechanism, a series of hoppers arranged above and feeding into the boxes, a transverse trough arranged above the hoppers and having a bed-plate with stationary knives arranged in pairs, a revolving shaft with knives spaced thereon to pass between the pairs of stationary knives, and spikes or arms fixed to the rotating shaft midway between the knives to positively feed the cut material down into the hoppers substantially as described.

5. A machine for compressing artificial fuel, comprising a main frame with supporting-wheels, a series of horizontal press-boxes mounted therein and provided with plungers, pitmen-rods, and a crank-shaft, a series of hoppers above the press-boxes having oil-tanks therein with feed-spouts for the oil, and a cutting device for fibrous material mounted above the hoppers and consisting of stationary bed-knives and a shaft with revolving knives substantially as and for the purpose described.

MARCUS L. BRATTON.

Witnesses:

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