

No. 829,046.

PATENTED AUG. 21, 1906.

T. B. WILCOX.  
BRIQUET MACHINERY.

APPLICATION FILED APR. 22, 1905.

3 SHEETS—SHEET 1.

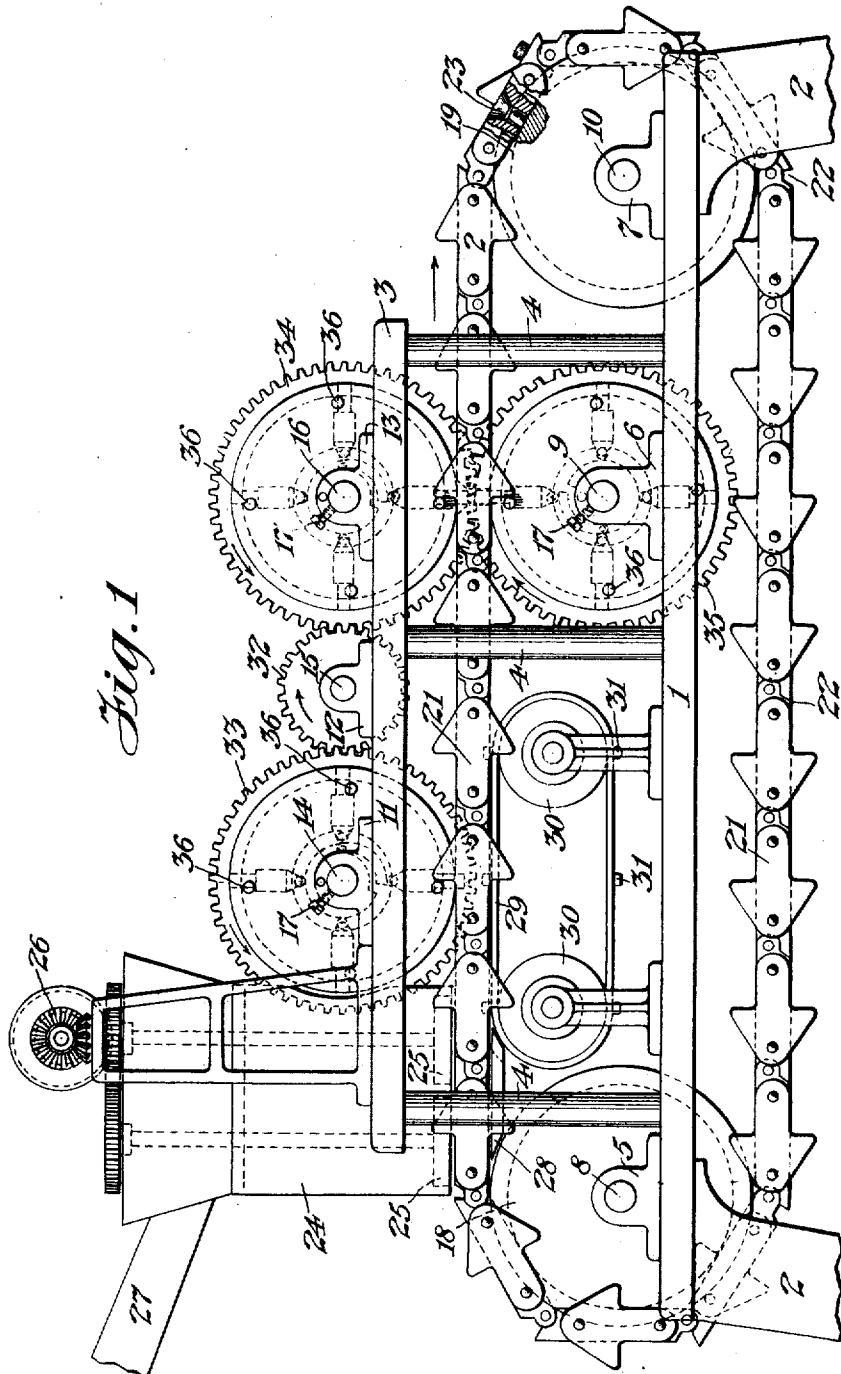


Fig. 1

Witnesses  
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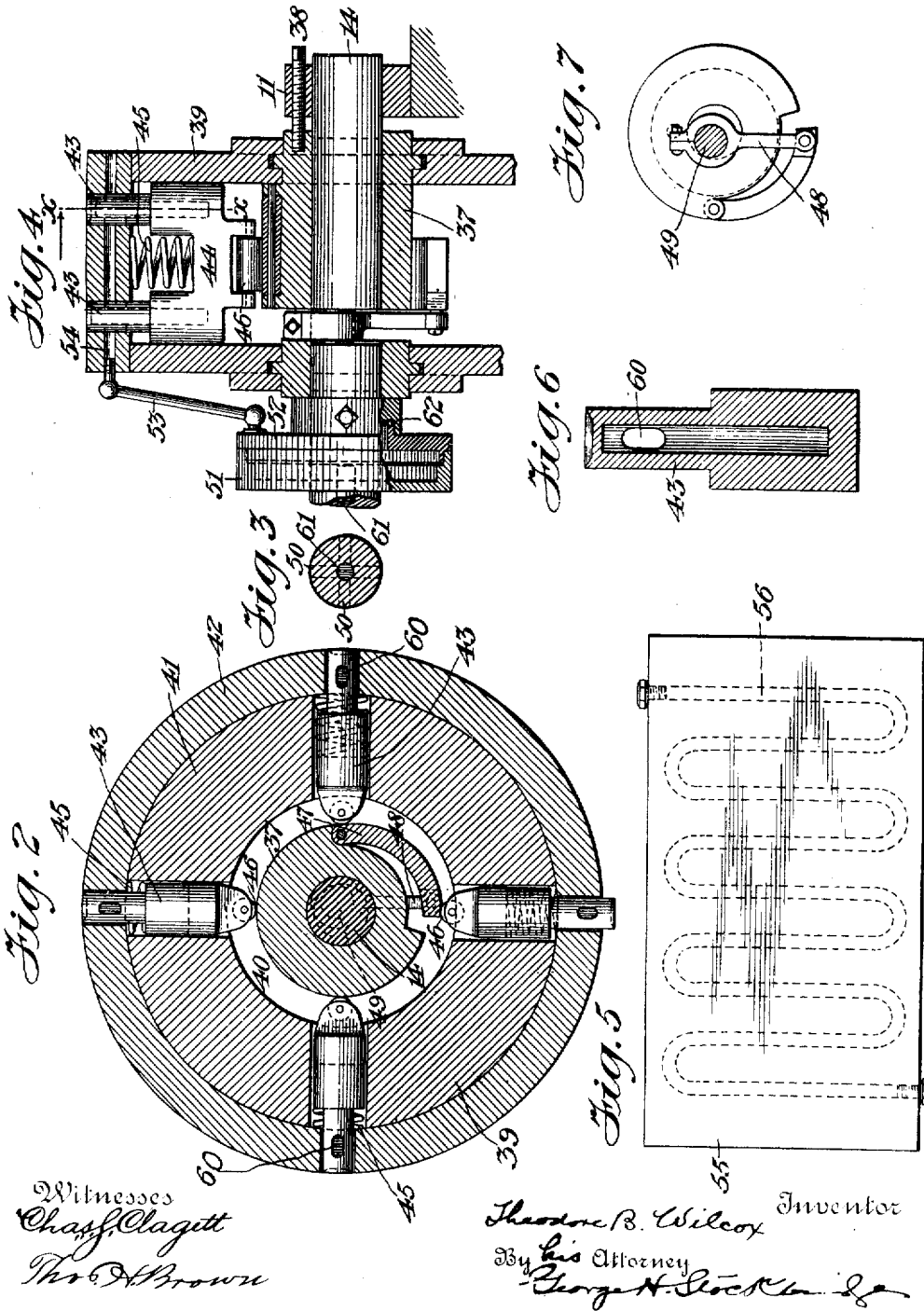
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By his Attorney  
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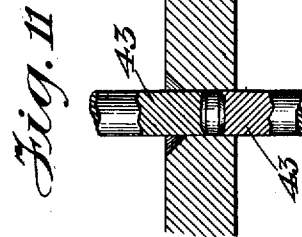
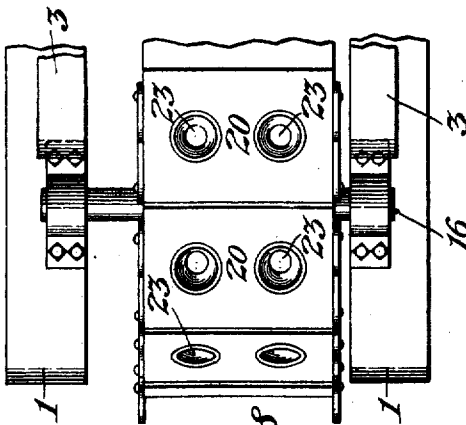
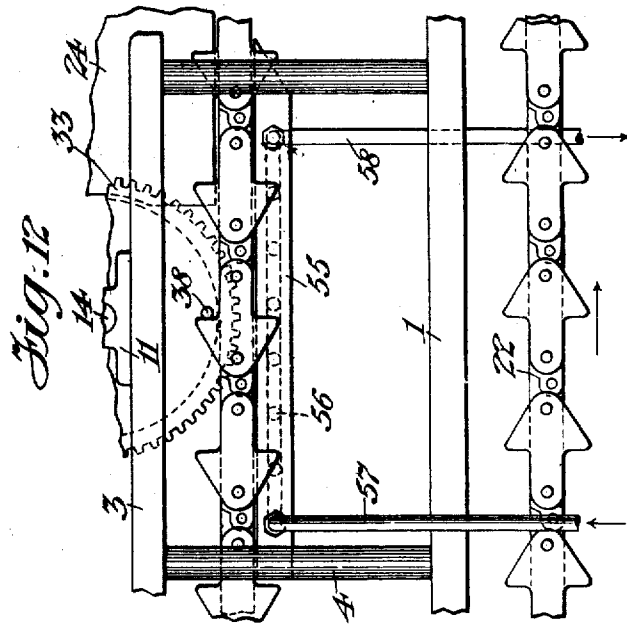
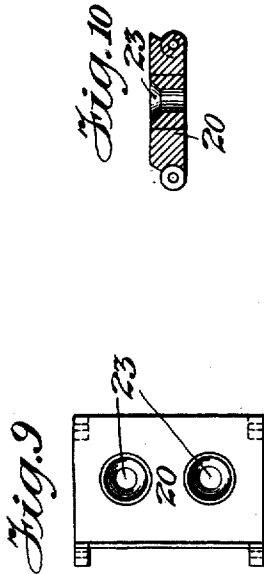


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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

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## BRIQUET MACHINERY.

No. 829,046.

Specification of Letters Patent.

Patented Aug. 21, 1906.

Application filed April 22, 1905. Serial No. 256,867.

*To all whom it may concern:*

Be it known that I, THEODORE BALDWIN WILCOX, a citizen of the United States, and a resident of Newark, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Briquet Machinery, of which the following is a specification.

The present invention relates particularly to machines for making briquets by compressing pitch or coal-dust with the use of a suitable binder; and it is plainly applicable to shaping other finely-divided or plastic materials either with or without a binder.

Figure 1 of the accompanying drawings is a side elevation of the briquet-making machine. Figs. 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11 are detail views, and Fig. 12 is a side elevation of a portion of a modified form of machine.

Referring to the drawings, 1 is the base of the machine, supported upon suitable standards 2 2 and connected, by means of posts 4 4, with a frame 3. On the base 1 are suitable journals 5, 6, and 7, in which are mounted shafts 8, 9, and 10, respectively, and on the frame 3 are journals 11, 12, and 13, in which are mounted shafts 14, 15, and 16, respectively. The shafts 8, 10, and 15 revolve in their journals, while the shafts 9, 14, and 16 are adjustably secured to the respective journals 6, 11, and 13 by means of set-screws 17 17. On the shafts 8 and 10 are drums 18 and 19, over which travel the endless or sprocket chain composed of plates 20 20, as shown in Fig. 8. The drum 19 may be provided with buttons or punchers for pushing out the briquets during the travel of the chain. To each end of every plate 20 of this chain is riveted a double-flanged bar 21 21 in the form of arrow-heads, by means of which the chain is carried forward in the direction of the arrow in Fig. 1. The plates 20 intermesh, as indicated at 22 22, so as to make the chain flexible in one direction and rigid in the opposite direction. In each plate are two dies 23 23.

At one end of the machine is a hopper 24, within which wipers 25 25 are adapted to be rotated by means of gearing 26, operated

from any suitable source of power. These last-named parts serve the function of causing the material which enters the hopper through the spout 27 to be distributed to the dies in the sprocket-chain. Below the hopper is a table 28, fixed to two of the posts 4 and in line with the upper surface of a traveling table 29, consisting of a band of sheet metal, for example, mounted on rollers 30 30 and adapted to be moved by the engagement of pins 31 31 on the traveling table with the under side of the sprocket-chain. The object of this is to relieve friction on the chain in passing over the table.

The shaft 15 is the driving-shaft. To it is secured a pinion 32, which engages with gear-wheels 33 and 34 on the shafts 14 and 16, respectively. The gear-wheel 34 engages in turn with a gear-wheel 35 on the shaft 9. By the rotation of the driving-shaft 15 in the direction of the arrow the gear-wheels 33, 34, and 35 are likewise rotated in the directions indicated by the arrows on the said wheels. From the face of each of the gear-wheels 33, 34, and 35 project pins 36, arranged in quadrature and adapted to engage with the flanges on the bars 21 21. It will be understood that this construction is duplicated at opposite sides of the machine. Accordingly the sprocket-chain is driven in the direction of the arrow above said chain in Fig. 1 by means of the pins on the several gear-wheels. It will be noted that the described gear-wheels are mounted upon the shafts 9, 14, and 16, these shafts being capable of adjustment to any desired position, but stationary during the operation of the machine. The construction at all these shafts is practically identical, and it is thought sufficient to describe only one of them.

Referring to Figs. 2 and 4, it will be seen that the shaft 14, for example, is surrounded by a sleeve 37, which is fixed to the journal 11 by means of a bolt 38. On this sleeve rotates a drum 39, which is secured to the gear-wheel 33, (shown in Fig. 1,) the ends of the drum having a bearing on the sleeve 37 and the drum being hollow in its interior, as shown at 40 in Fig. 2. The drum 39 preferably comprises two concentric rings 41 and 42, 100

binding on each other, and through the drum project formers 43 43, preferably arranged in quadrature. The ends of these formers are shaped, as shown in Fig. 11, so as to press the material into approximately the shape of a truncated double cone, although other shapes may be preferred. The formers are generally arranged in pairs, (see Fig. 4,) each of said formers being secured to a yoke 44 and pressed inward toward the stationary sleeve 37 by a spring 45. At the inner ends of the yokes rollers 46 46 are provided to relieve friction. When the rollers are seated upon the main body of the sleeve, the outer ends of the formers are flush with the periphery of the drum 39. At one portion of its surface the sleeve 37 is cut away, and a wing 47 is hinged inside the cut-away portion and connected with a rod 48, which surrounds an eccentric 49 on the shaft 14. By loosening the set-screw 17 and turning the shaft 14 in its bearing the wing 47 can be thrust out or drawn in, so as to make the cam effect of the said wing more or less pronounced, after which the set-screw will be seated to fasten the shaft in position. This operation of the set-screw takes place at both sides of the machine. The formers 43 are each provided with perforations 60 60 on opposite sides, through which steam or other heated fluid may be passed for heating the formers, so as to aid in shaping the material. For heating purposes I show in Fig. 4 the shaft 14 as being provided at 61 with a perforation leading to side perforations 50 50. The latter enter a ring 51, mounted on the shaft and provided with a movable disk or face 52, to which are connected hollow links 53, leading to openings in the drum 39, one of said openings being shown at 54. The said openings communicate with the slots 60 in the formers 43. Thus the steam may enter and pass through the formers, heating the thin walls at the inner faces thereof, and at the same time the revolving parts need not be interrupted, inasmuch as the links 53 are easily able to drag the disk 52 after them. It will be understood that the formers in the drums surrounding the shaft 16 will be actively engaged with the upper side of the material to be shaped at the same time that the formers in the drum surrounding the shaft 9 are engaging the under side thereof, as indicated in Fig. 11. It will also be understood that the pins 36 on the gear-wheels 34 and 35 will engage the flanges on the bars 21 at precisely the moment when the formers on opposite sides of the sprocket-chain are in line with the dies in the said chain and the material contained therein. Accordingly the chain will be positively engaged by the pins at the time when the formers are doing their work, and the latter will not be required to assist in

moving forward the chain. The same relations exist at the formers in the drum 39, which formers, however, do not cooperate with any corresponding formers below the chain, but only act upon the upper side of the material in the dies, as the first operation of shaping the material supplied from the hopper 24.

In Fig. 12 the traveling table 29 is replaced by a stationary table 55, provided with heating-coils 56, (shown in Fig. 5,) the said coils being connected with vertical inlet and outlet pipes 57 and 58, as shown in Fig. 12. The pipe 57 may be supplied with heating fluid from any source. To reduce friction in the movement of the disk 52, ball-bearings are provided, as indicated at 62.

I claim as my invention—

1. In a machine of the character described, traveling dies, means for charging the said dies, revolving drums on opposite sides of the path of motion of the dies, formers carried by the said revolving drums and stationary adjustable cams brought into operation by the revolution of the said drums for pressing the said formers against the material in the dies from opposite sides.

2. In a machine of the character described, traveling dies, means for charging the said dies, revolving drums on opposite sides of the path of motion of the said dies, formers carried by the said revolving drums, and adjustable stationary cams brought into operation by the revolution of the said drums for pressing the said formers against the material in the dies from opposite sides, and means for ejecting the material formed under pressure.

3. In a machine of the character described, a carrier in the form of a sprocket-chain, dies mounted in the said carrier, means for charging the dies, formers adapted to cooperate with the dies to shape the charge, devices on which the formers are mounted, means connected with the said devices for driving the sprocket-chain, and means whereby the sprocket is positively engaged by the driving means at the moment when the formers are pressing against the charge.

4. In a machine of the character described, a carrier in the form of a sprocket-chain, dies in said carrier, revolving drums on opposite sides of the path of motion of the carrier, formers carried by the said revolving drums and stationary adjustable cams eccentric to the axis of rotation of the said drums, the said cams being brought into operation by the revolution of the said drums for pressing the said formers against the material in the dies.

5. In a machine of the character described, a carrier in the form of a sprocket-chain, dies in said carrier, revolving drums on opposite sides of the path of motion of the carrier,

formers carried by the said revolving drums  
and stationary adjustable cams eccentric to  
the axis of rotation of the said drums, the  
said cams being brought into operation by  
5 the revolution of the said drums for pressing  
the said formers against the material in the  
dies from opposite sides.

Signed at New York, in the county of New  
York and State of New York, this 21st day  
of April, A. D. 1905.

THEODORE BALDWIN WILCOX.

Witnesses:

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GEORGE H. STOCKBRIDGE.