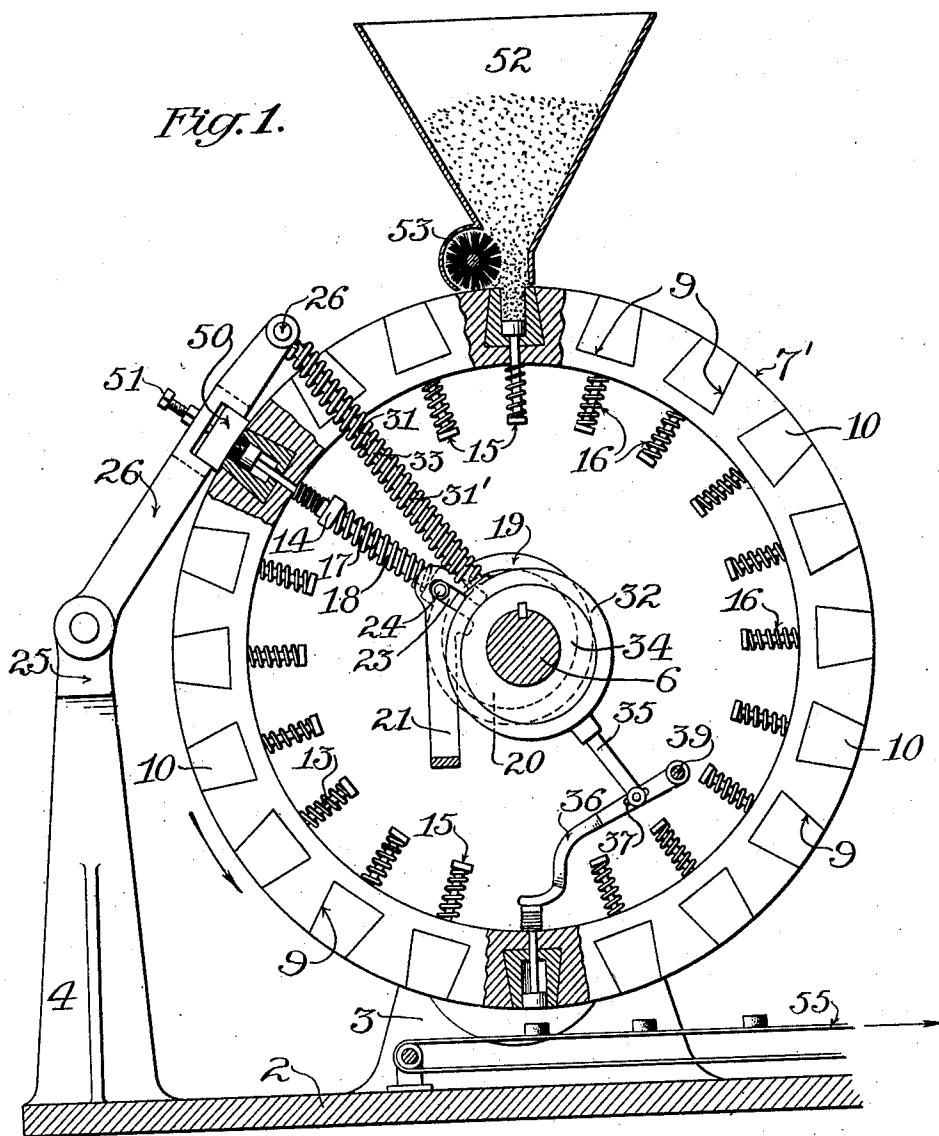


No. 832,553.

PATENTED OCT. 2, 1906.

H. E. MARSH.
BRIQUETING MACHINE.
APPLICATION FILED JAN. 30, 1905.

3 SHEETS—SHEET 1.



Witnesses:
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Attorney

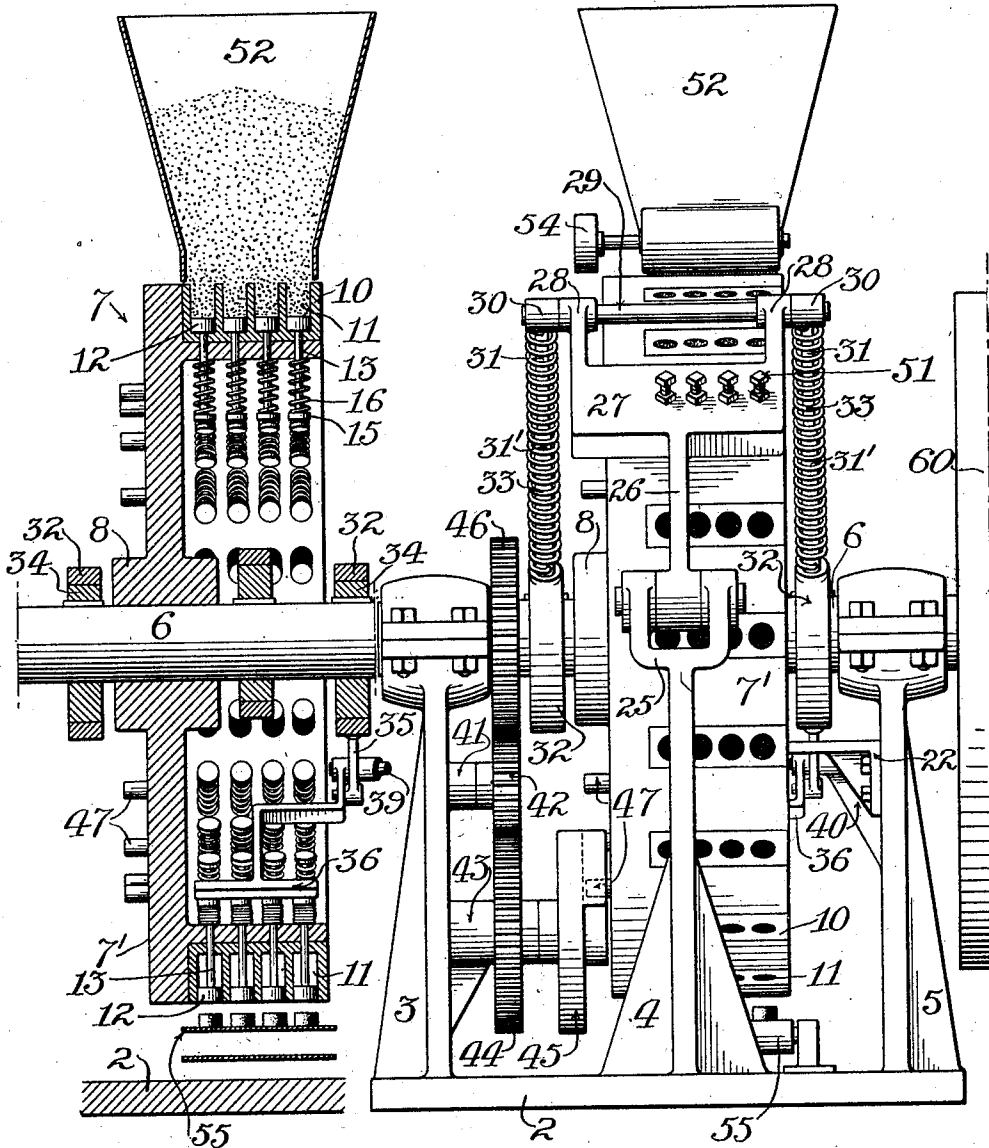
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APPLICATION FILED JAN. 30, 1905.

3 SHEETS—SHEET 2.

Fig. 3.

Fig. 2.



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3 SHEETS—SHEET 3:

Fig. 4

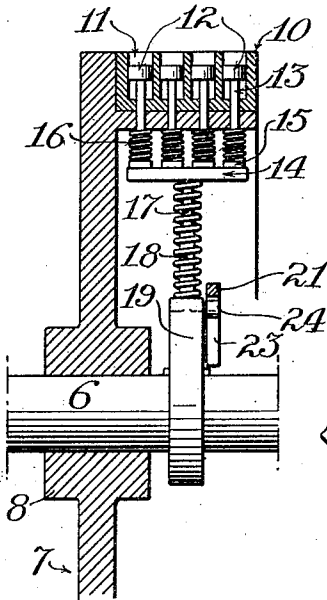


Fig. 5.

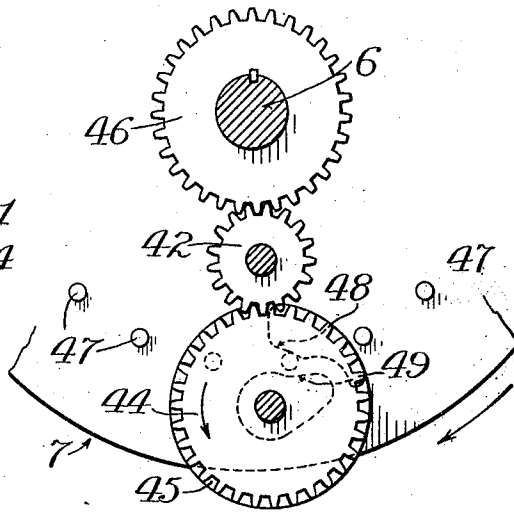
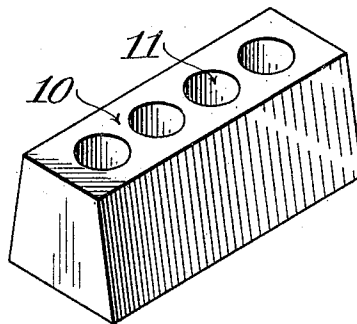


Fig. 6.



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UNITED STATES PATENT OFFICE.

HOWARD E. MARSH, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO WILLIAM P. WAGY AND ONE-FOURTH TO F. D. PARKER, OF LOS ANGELES, CALIFORNIA.

BRIQUETING-MACHINE.

No. 832,553.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed January 30, 1905. Serial No. 243,202.

To all whom it may concern:

Be it known that I, HOWARD E. MARSH, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Briqueting-Machines, of which the following is a specification.

This invention relates to machines for manufacturing briquets, and particularly fuel briquets, and has for its primary object the provision of a simple, compact, and durable machine composed of few parts which shall be exceedingly positive and efficient in operation.

A further object is to provide a machine of a class in which the rotary drum is provided with series of mold-boxes for molding the fuel into briquets and providing upon the main shaft of such drum eccentric means for compressing the fuel into briquets and for ejecting the compressed briquets onto a delivery means.

The invention consists, further, in the constructions and combinations of parts, all hereinafter particularly described, and set forth in the appended claims, and will be more readily understood by reference to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a transverse sectional view of a machine embodying my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a longitudinal sectional view of the rotary drum, showing the compressing and ejecting plungers and the manner of mounting the same with relation to the mold-boxes. Fig. 4 is a sectional detail view of a portion of the drum, showing the main shaft and the presser-foot-operating means in connection with the compressing and ejecting plungers and mold-boxes. Fig. 5 is a diagrammatic view of the means employed for imparting an intermittent motion to the drum. Fig. 6 is a perspective view of one of the mold-boxes.

As shown in the drawings, 2 represents the base, provided with three vertical standards 3 4 5, the two standards 3 5 being arranged at opposite ends of the base 2 and provided with bearings for the main shaft 6 of the machine. The journal-boxes may be of the ordinary or any preferred construction and are illustrated in the drawings as of the

ordinary two-part bearings, the cap being removable to allow the withdrawal of the shaft and the caps being bolted to the under part of the bearings formed integral with the standards 3 5.

7 represents the rotary drum, which has a central bearing for the shaft 6, one face or side of the drum being preferably made solid and the central portion being provided with a boss or enlargement 8 to form a long bearing for the drum 7. The opposite side and the interior of the drum are preferably hollow, as shown, so as to provide room for the operation of the compressor and ejector means.

The face 7' of the drum 7 is provided with a series of seats 9, preferably dovetailed, as shown, in which removable mold-boxes 10 may be inserted, the end of the dovetailed seats 9 opposite the face 7' being open to permit of insertion of the mold-boxes. The molds 11 of these mold-boxes may be of any preferred form, but are shown in the drawings as cylindrical. I have shown in the drawings four series of molds in each mold-box; but it is obvious that a single mold or any number of molds may be provided in each mold-box as it may be desired to increase or decrease the working capacity of the machine. Each mold-box is provided with a plunger 12, corresponding to the cross-sectional shape of the mold and having a stem 13. The stems 13 are provided with heads 15, forming seats for coil-springs 16, which extend about the plunger-stems 13 and are adapted to exert pressure between the heads 15 and inner face of the rim of the rotary drum, so that normally the plungers 12 are forced inwardly and drawn back into the molds 11. The heads 15 may be ordinary bolts or may be secured on the ends of the stems 13 by pins or set-screws, as desired.

The presser-foot 14 has a rod or stem 17, which telescopes into a hollow rod 18, carried by a strap 19, in turn mounted upon and operated by the eccentric 20, (shown in dotted lines in Fig. 1,) this eccentric being carried on the main shaft 6 of the rotary drum. In order to prevent the strap 19 rotating with the eccentric 20 and to support the presser-foot 14 in proper position, I provide an arm 21, supported from the standard 5 by a bracket 22. The upper end of this arm 21

has a long slot 23, into which a projection 24 on the hollow rod 18 extends, and an antifric-tion-ring being preferably provided on this projection. It is thus seen that the rod 18 is
 5 free to reciprocate back and forth, although held in its inclined position.

The upper end of the standard 4 termi-nates in a yoke 25, in which is hinged the compressor-arm 26, which has formed integral
 10 with it the compressor-plate 27, having in turn two arms 28, through which a rod 29 passes. This rod 29 has on its ends two short sleeves 30, connected with rods 31, tele-scoping in rods 31', which have their lower
 15 ends connected to straps 32, mounted on the main shaft 6. About these arms 31 31' are coil-springs 33, having their respective ends connected with the rods 31 31'. These
 20 springs 33 are contraction-springs, and being connected with the rods 31', which are in turn connected with the straps 32, the ten-sion of the springs is operated by the cams 34 to reciprocate the arm 26. The cams 34 are
 keyed on the shaft 6.

25 The strap 32 opposite the open face of the rotary drum is provided with an arm 35, and an ejector 36 is provided with a slot 37, in which a pin or lug on the end of the arm 35 is adapted to operate. This pin may be secured
 30 in place on the arm 35 in the ordinary or any preferred manner. The ejector 36 has one end formed as a hollow sleeve and encircling a stud 39 and projecting from the bracket 40 of the standard 5.

35 The standard 3 is provided with a boss 41, terminating in a stud-shaft on which a pinion 42 is mounted, and said standard 3 is also provided with a boss 43, terminating in a stud-shaft on which a gear 44 is mounted,
 40 said gear being in mesh with the pinion 42, and on the end of this last-named stud-shaft and beyond the gear 44, but fixed to rotate with said gear 44, is a cam-plate 45. A gear or pinion 46 is mounted on the shaft 6 directly
 45 above the pinion 42 and in mesh therewith. The face 7' of the rotary drum 7 is provided with a series of pins 47, suitably spaced to correspond with the distances between the several mold-boxes 10.

50 The cam-plate 45 is provided with two cam-surfaces 48 49, (shown in dotted lines in Fig. 5,) forming between the two faces 48 49 a track or way for the pins 47. It will be noted that the revolution of the gear 44 will carry
 55 the plate 45 with it, and the revolution of this plate will carry the projecting end of the cam 49 against the pin 47, moving the drum about, the partial revolution being such as to bring a succeeding row of molds under the
 60 compressor-plate 50 of the compressor-arm 26 and at the same time bringing a succeeding mold-box under the ejector 36. The inter-mittent revolution of the rotary drum 7 by this cam motion permits of proper ejection
 65 of the briquets and also permits the

proper revolution of the eccentrics 32 34 on the shaft 6 to throw up the plungers 12 of the respective mold-boxes under the arm 26 and pull down the compressor-arm 26 and compressor-block 50 to compress the material in
 70 the mold-boxes in position for such action.

The compressor-arm 26 preferably has the compressor-plate 50 formed separate from the arm and mounted in a seat or guide-way therein and slidable so that the degree of
 75 compression may be adjusted. For this purpose I provide a series of adjusting-screws 51, there preferably being one for each of the molds in the mold-boxes. These adjusting-screws 51 pass through the compressor-plate
 80 27 and bear against the outer surface of the separate compressor-plate 50. By adjusting these respective screws 51 any degree of compression can be secured in any one of the mold-boxes, thus providing against any un-
 85 evenness in the surface of the plate.

52 represents a suitable hopper having an opening in its bottom and arranged so as to come over a row of molds in the mold-boxes, being preferably arranged at the top of the
 90 drum. At the bottom of the hopper I prefer to provide a brush 53. This brush has a suitable shaft having bearings in the sides of the hopper and is provided with a suitable pulley 54, by which it may be driven. One wall of
 95 the hopper is preferably curved so as to cover the brush. The object of this brush is to brush away the material as the mold-box passes from under the hopper, insuring the filling of the mold-boxes in even manner at
 100 all times, thereby securing uniform size and weight of briquets.

Preferably a carrier-belt 55 is suitably mounted at the bottom of the machine to carry the briquets to the proper receptacles.
 105 This carrier-belt is connected with a suitable source of power.

60 represents a balance-wheel on the end of the shaft 6. I prefer that this balance-wheel should be in the form of a balance-pulley, so that the driving-belt (not shown in the drawings) may be connected therewith.
 110

By providing the face 7' of the rotary drum with a series of suitably-spaced pins 47 and providing the cam-plate 45 with two cam-
 115 faces or cams 48 49, adapted to operate upon the pins 47, the rotary drum 7 is given an intermittent partial rotation after the plungers 12 and compression-arm 26 have been operated to compress the material in the given
 120 series of molds to bring under the compression-plate 50 of the arm 26 another series of molds. With the construction shown in the drawings the ejector 36 is simultaneously operated with the operation of the compression-arm 26 and compression-shoe 14 to
 125 cause the plungers in the given series of mold-boxes, which have been brought into line with the shoe of the ejector 36 to be pressed inward into the molds and cause the com-
 130

pressed material now in the form of briquets to be forced out of the mold-boxes and deposited on the carrier-belt 55. This intermittent partial rotation of the rotary drum 7 is so timed as to permit of the proper and complete operation of the arm 26 and given plungers 12 to compress the material in the given molds and to permit at the same time the ejector 36 to force out the given plungers, and thereby deposit the completed briquets on the carrier 55. This is accomplished by the proper regulation of the train of gears 42 44 46 and the eccentrics 32 34 on the main shaft.

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

1. The combination with a main shaft, of a revoluble drum thereon having peripheral molds opening at the periphery of said drum, plungers in said molds, a compressor-arm pivoted externally of said drum in proximity thereto, means eccentrically connected with said shaft for operating said compressor-arm, an eccentric on said shaft, a strap operatively connected therewith, said strap provided with a hollow rod, a compressor-plate telescopically connected with said hollow rod, a spring interposed thereabout, and ejector means.

2. The combination with a main shaft, of a revoluble drum thereon having peripheral molds opening at the periphery of said drum, plungers in said molds, a compressor-arm pivoted externally of said drum in proximity thereto, means eccentrically connected with said shaft for operating said compressor-arm, an eccentric on said shaft, a strap operatively connected therewith, said strap provided with a hollow rod, a compressor-plate telescopically connected with said hollow rod, a spring interposed thereabout, and a pivoted ejector eccentrically operated from said shaft for operating said plungers to eject the compressed product from said molds.

3. The combination with a main shaft, of a revoluble drum thereon, said drum provided with peripheral molds opening at the periphery of said drum, plungers in said molds, a compressor-arm pivoted externally of said drum in proximity thereto, an eccentric mounted on said shaft, a strap connected with said eccentric, a spring connected with the free end of said compressor-arm and with said strap, a second eccentric on said shaft, a strap connected therewith, spring means operated by said strap for operating said plungers to compress the material in said molds, and ejector means.

4. The combination, with a base, of a

shaft, a revoluble drum thereon having peripheral molds, a standard, a compressor-arm pivoted thereon tangentially to said drum, an eccentric on said shaft, spring means operated by said eccentric for actuating said compressor-arm, a second eccentric on said shaft, telescopic means actuated by said second eccentric for compressing said plungers simultaneously with the compression of said arm, a pivoted ejector, and means connected with one of said eccentrics for operating said ejector.

5. The combination with a base, of a shaft, a revoluble drum thereon provided with peripheral molds, plungers in said molds, a standard, a compressor-arm pivotally mounted on said standard tangentially to said drum, an eccentric on said shaft operatively connected with the free end of said compressor-arm, a second eccentric on said shaft, a strap operated thereby, means operated by said strap for actuating said plungers simultaneously with the actuation of said arm, and an ejector pivotally mounted in said base and operatively connected with one of said eccentrics whereby such eccentric causes said ejector to be actuated against said plungers to discharge the compressed product.

6. The combination, with a shaft, of a drum loose thereon and having peripheral molds, plungers in said molds, eccentric means for operating said plungers to compress the material in said molds and to eject the compressed product, eccentrically-operated compressing means coöperating with said plungers, a series of pins on said drum, and a cam for intermittently engaging said pins to partially revolve said drum.

7. The combination with a main shaft, of a revoluble drum thereon having peripheral molds opening at the periphery of said drum, plungers in said molds, a compressor-arm pivoted externally of said drum in proximity thereto, means eccentrically connected with said shaft for operating said compressor-arm, an eccentric on said shaft, a strap operatively connected therewith, said strap provided with a hollow rod, a compressor-plate slidably connected with said rod, a spring for forcing said rod and plate apart, and ejector means.

In testimony whereof I have hereunto set my hand, at Los Angeles, this 23d day of January, 1905.

HOWARD E. MARSH.

In presence of—

FREDERICK S. LYON,
JULIA TOWNSEND.