

(Model.)

2 Sheets—Sheet 1.

N. R. SHEETS & M. T. GOFORTH.  
CHURN DASHER.

No. 435,369.

Patented Aug. 26, 1890.

FIG-2-

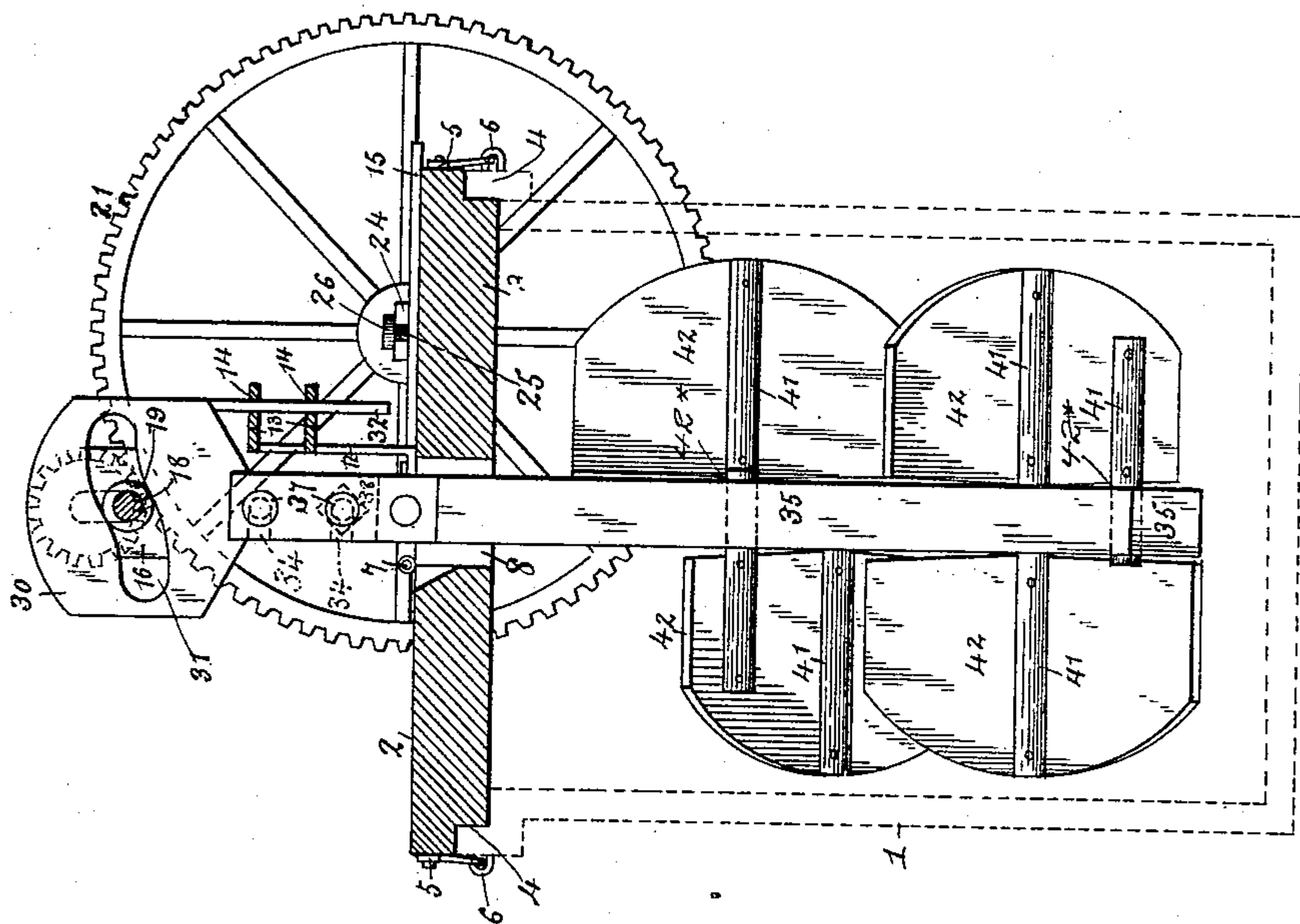
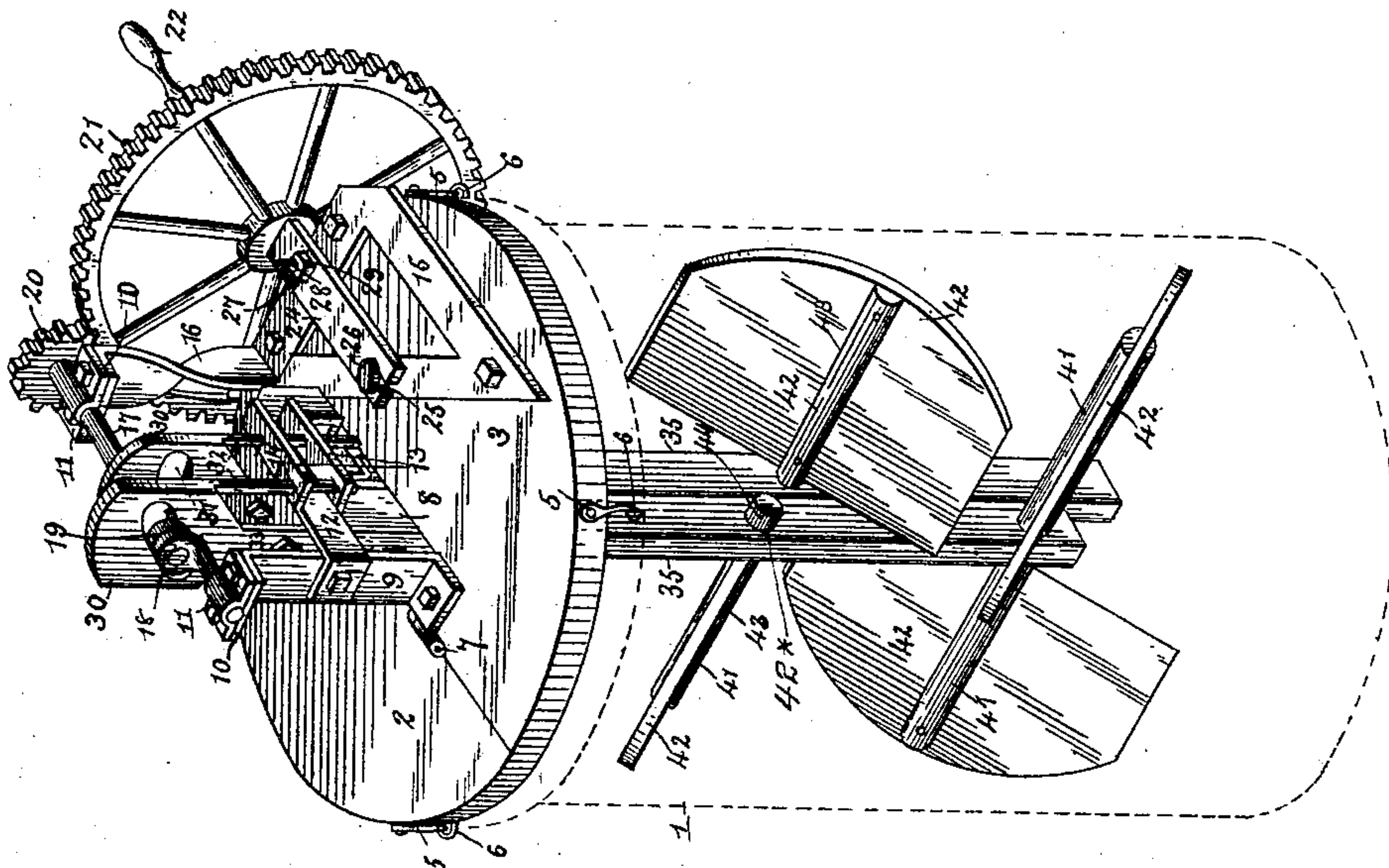


FIG-1-



Witnesses:

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Inventor

Nial R. Sheets

By his Attorneys, Marshall T. Goforth

Cash & Co.

(Model.)

2 Sheets—Sheet 2.

N. R. SHEETS & M. T. GOFORTH.  
CHURN DASHER.

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FIG. 3.

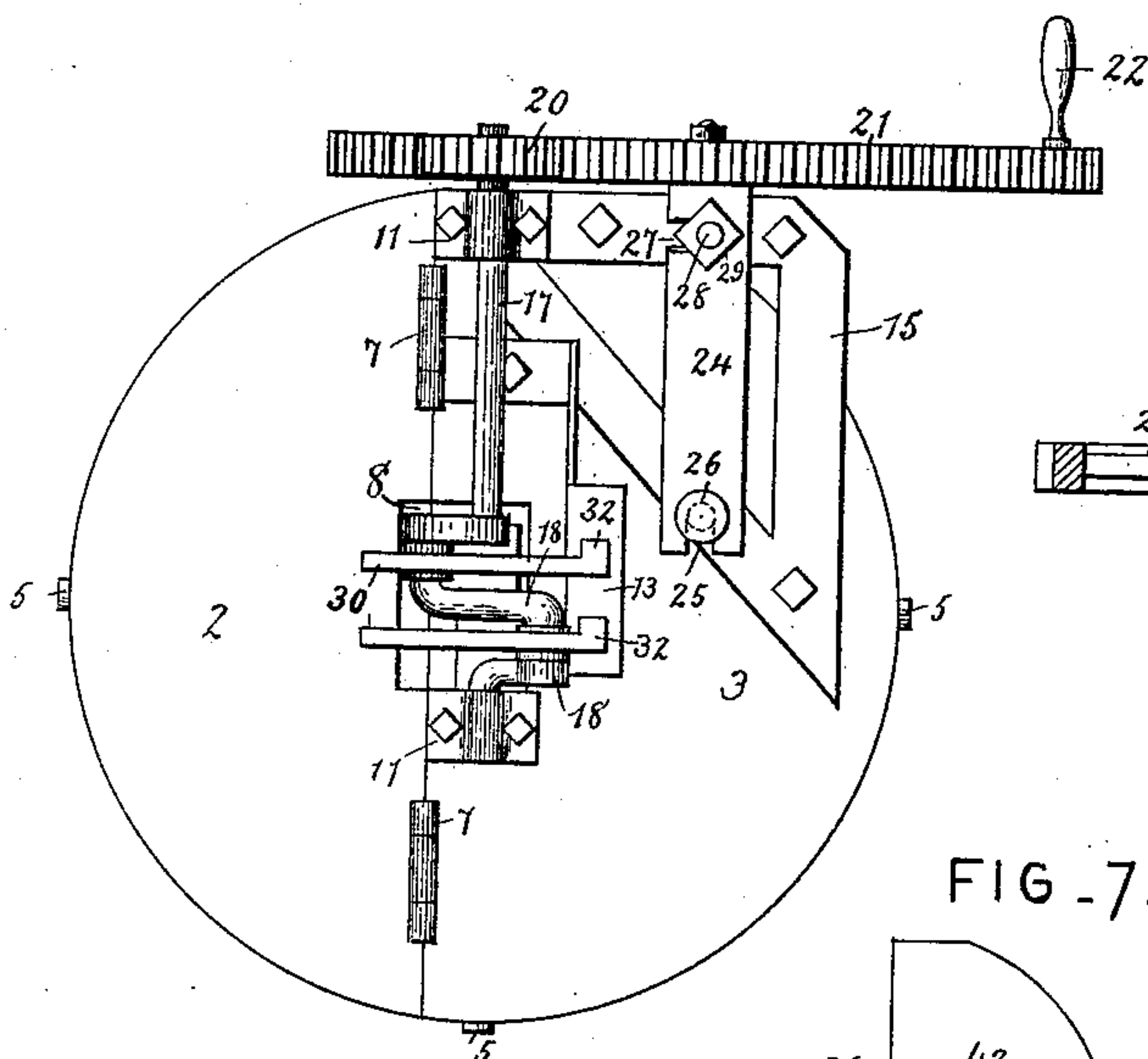


FIG. 4.

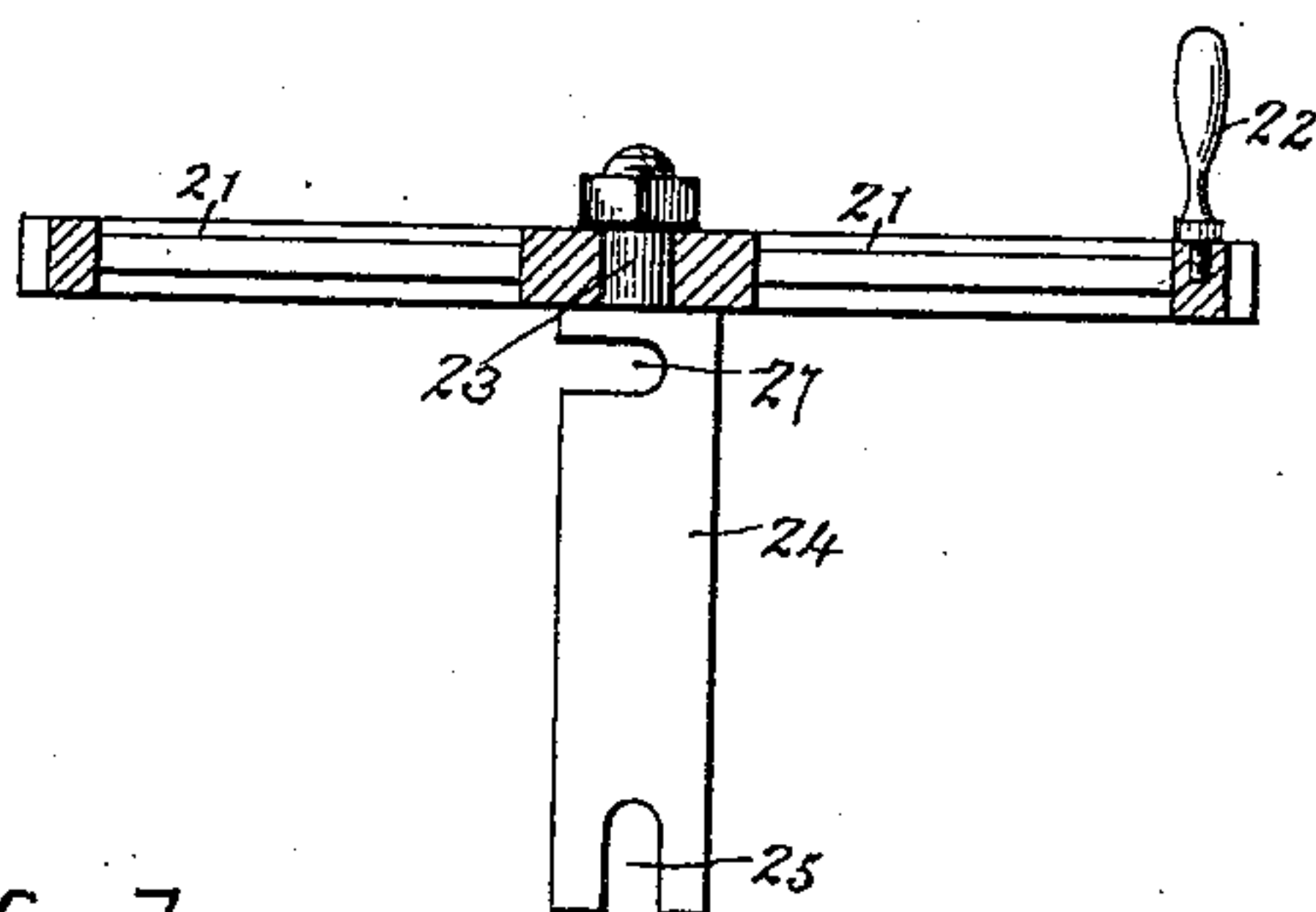


FIG. 7.

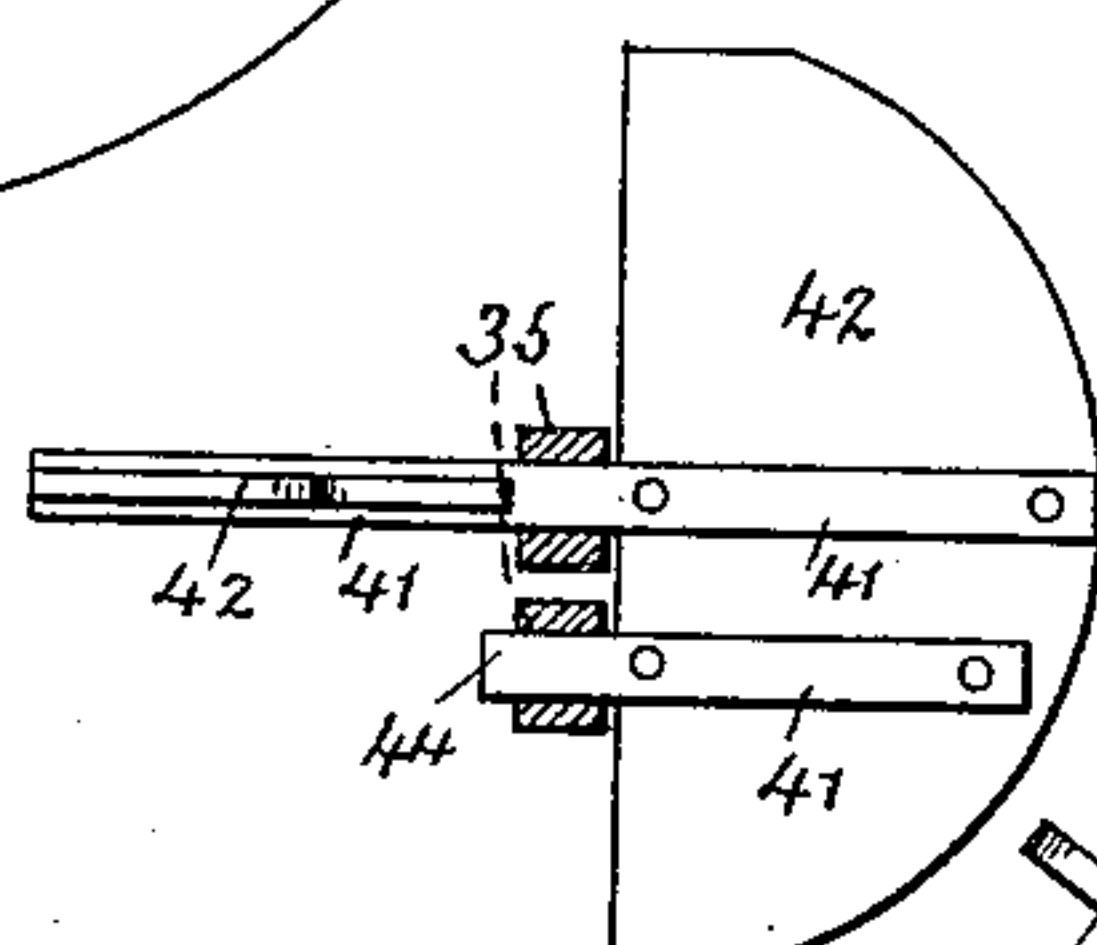


FIG. 5.

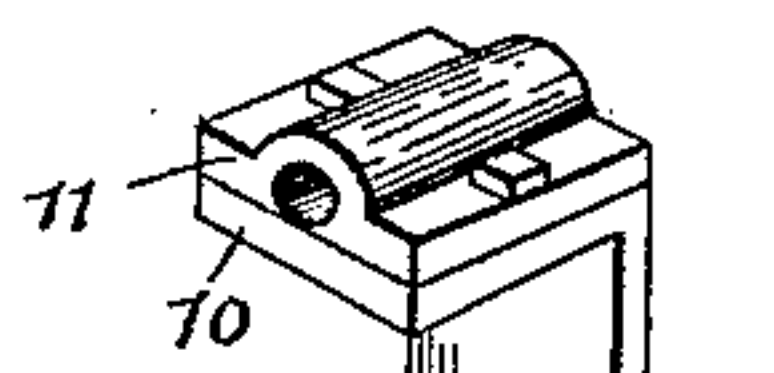


FIG. 8.

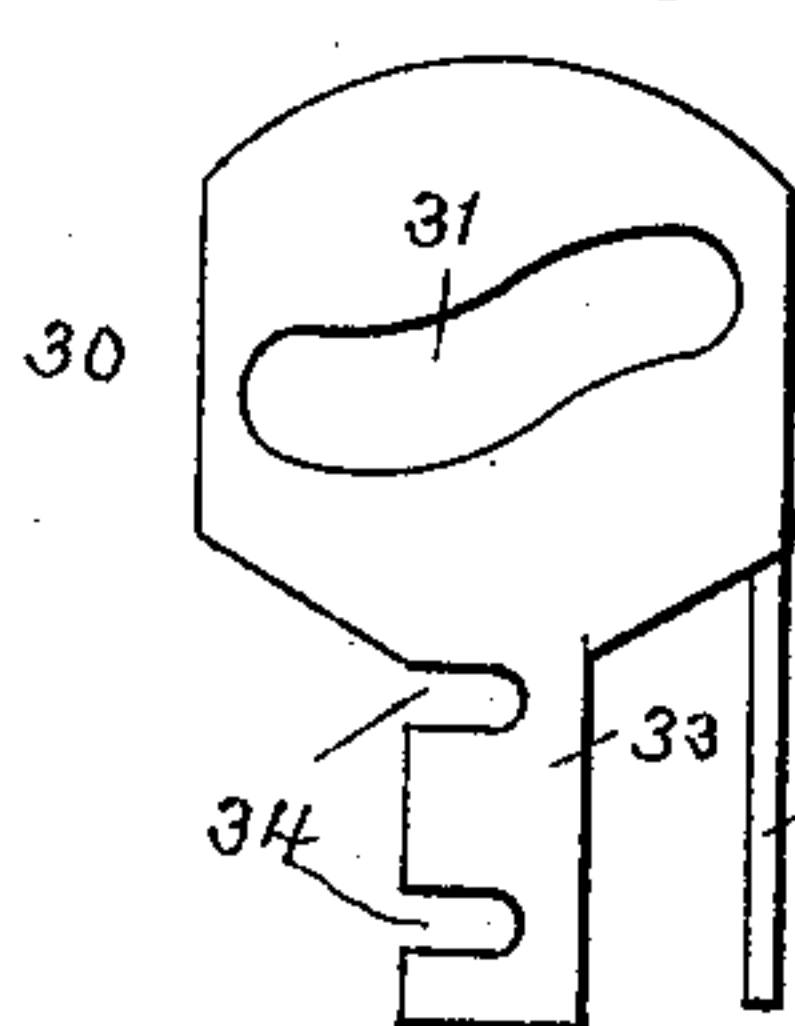
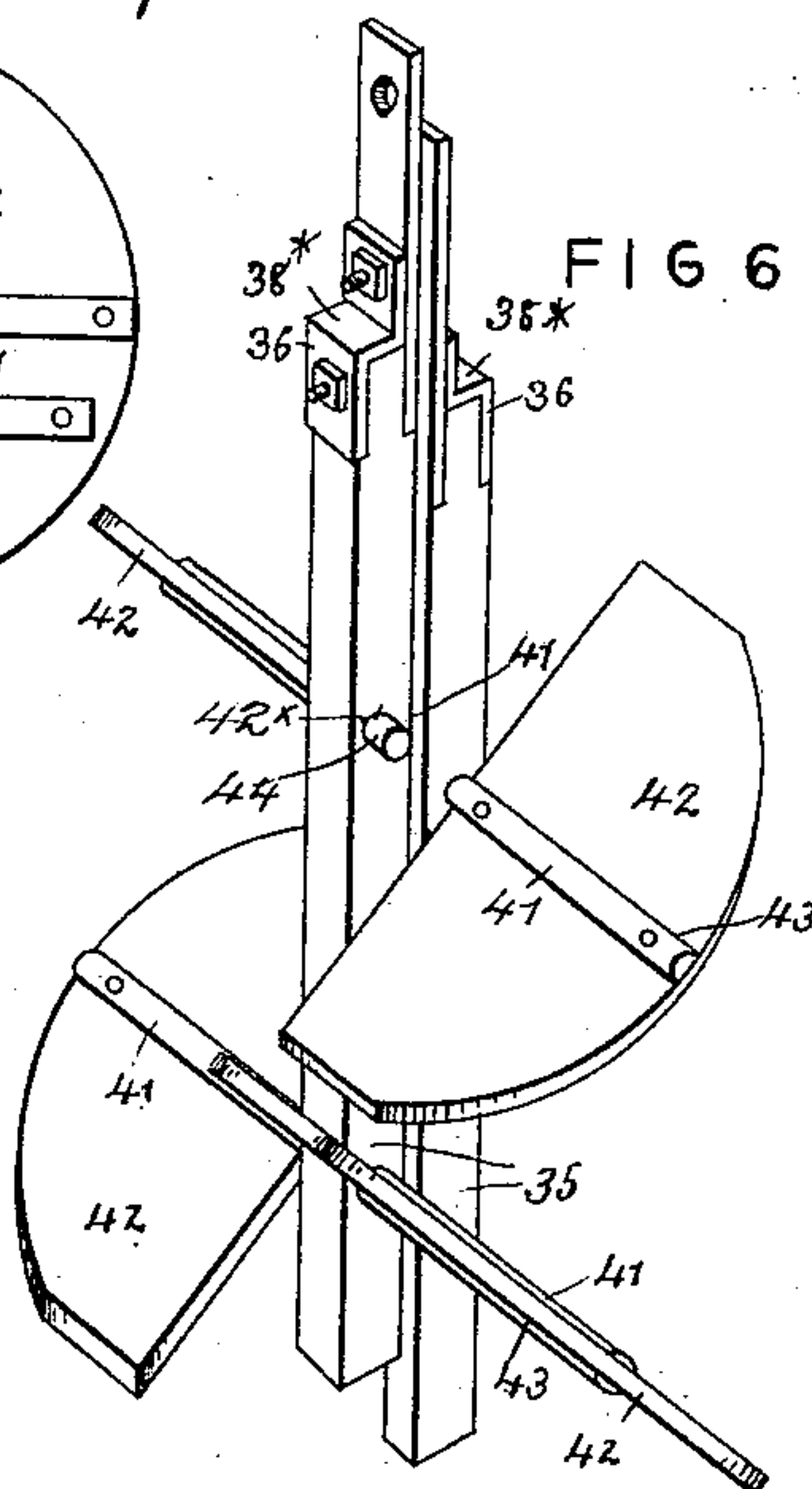


FIG. 6.



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# UNITED STATES PATENT OFFICE.

NIAL R. SHEETS AND MARSHALL TILMAN GOFORTH, OF DIGHTON, KANSAS,  
ASSIGNORS OF ONE-HALF TO JAY R. HOLTON AND CLARK E. HOLTON,  
BOTH OF SAME PLACE.

## CHURN-DASHER.

SPECIFICATION forming part of Letters Patent No. 435,369, dated August 26, 1890.

Application filed April 25, 1890. Serial No. 349,550. (Model.)

*To all whom it may concern:*

Be it known that we, NIAL R. SHEETS and MARSHALL TILMAN GOFORTH, citizens of the United States, residing at Dighton, in the county of Lane and State of Kansas, have invented a new and useful Churn-Dasher, of which the following is a specification.

This invention has relation to churn motors and dashers of that class especially adapted for use in crockery-churn bodies, though, as will hereinafter appear, the motor and dashers may be employed in any ordinary churn-body.

The objects of the invention are to provide at a minimum cost an exceedingly easy-running simple motor adapted to operate two twin dasher rods or shafts alternately, and provide said shafts with oscillating paddles or dashers, thereby combining the reciprocating with the oscillatory movement of the dashers.

Various minor objects of the invention will hereinafter appear, and the novel features will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective of a churn motor and dashers constructed in accordance with our invention, the churn-body being dotted in position. Fig. 2 is a transverse section between the dashers. Fig. 3 is a plan. Fig. 4 is a detail of the drive-wheel and its shaft. Fig. 5 is a detail of the supporting-standard. Fig. 6 is a detail in perspective of the lower ends of the dasher shafts and dashers. Fig. 7 is a transverse view of the dashers. Fig. 8 is an elevation of the cam-head.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 represents an ordinary churn-body, preferably of that class formed of earthenware, and upon the same is fitted a circular cover formed in sections or halves 2 and 3, the periphery of the cover, as a whole, being provided with an L-shaped groove or recess 4, adapted to fit within the churn-body and removable therefrom. Each of the sections 2 and 3 are provided with pivoted hooks 5, designed to take under lugs or staples 6, arranged at the sides of the churn-body, whereby

the cover is locked in position. The cover 3 is hinged, as at 7, to the cover 2, and may be readily raised for inspecting the contents of the churn-body. The section 3 supports the motive mechanism hereinafter described, and is provided near its center with an oblong opening 8. At one side of the opening 8 there is arranged a standard 9, the upper end of which is provided with one-half of a box or bearing 10, and upon the same is bolted the upper half of said box or bearing 11. The lower portion of the standard is bent at an angle, and securely bolted to the cover, as shown. From the standard there projects laterally a horizontal frame 12, provided with upper and lower flanges 13, each of which has formed therein a pair of square openings 14, the upper pair aligning with the lower pair, and the opposite extremity of the frame being bolted to the cover. This frame is in parallelism with one edge of the oblong opening in the cover.

15 represents a cast-metal plate securely bolted to the cover at that side thereof opposite to which is located the standard 9, and opposite said opening there is formed upon the plate a standard 16, also provided at its upper end with the opposite halves 10 and 11 of a bearing or box, and in the bearings or boxes 10 and 11 of the two standards there is mounted a cranked shaft 17, which intermediate its bearings has formed oppositely-disposed cranks 18, said cranks being provided with rollers 19 and occurring vertically above the opening in the cover. One end of the shaft is extended beyond its bearing and carries a small pinion 20.

21 represents the main gear-wheel provided with an operating-handle 22 and loosely mounted upon a shaft or bearing 23 formed at the front end of a plate 24, which plate has its rear end bifurcated or notched, as at 25, and adapted to be inserted under the head and astride the shank of a headed lug 26 cast integral with or secured to the cast-metal plate 15. Near the wheel the plate is transversely recessed, as at 27, and adapted to embrace a bolt 28, projecting through said cast-metal plate 15, and be maintained in position with



relation to the plate and bolt by means of a set-nut 29 threaded on the bolt. The main gear thus described meshes with and drives the small pinion of the crank-shaft, and consequently the cranks.

30 represents a pair of plates or castings, one being mounted upon each of the rollers of the cranks of the crank-shaft, for which purpose said castings are provided with S-shaped cam-slots 31. Two of the adjacent ends of the castings are provided with depending and in cross-section square guide-pins 32, which enter and reciprocate in the openings 14. From the lower edges of the plates depend extensions 33, each of which is provided with an upper and lower notch 34, formed in one of its edges.

35 represents the dasher-staffs, there being two, and of similar construction. The upper ends of the staffs are embraced by the lower bifurcated end of a casting 36, the upper end of the casting being provided with an upper stud 37 adapted to engage the upper notch of its respective guide-plate, and below the same provided with bolts 37, having set-screws 38 designed to engage the lower recesses or slots of the plates. Below the nuts 37 the castings are provided with shoulders 38\*, which abut against the lower ends of the depending extensions of the guide or cam slotted plates or castings. In this manner it will be seen that the dasher-staffs may be readily disconnected from the said plates or castings or connected thereto, for any purpose whatsoever.

The two dasher-staffs are each provided with a pair of openings 40, arranged vertically opposite each other, and in the upper opening of one staff and the lower opening of the opposite staff there is inserted a transverse shaft 41, provided at each side of the dasher-staff with a paddle or blade 42, said paddles or blades being inserted in slots 43, formed at a right angle to each other in the opposite ends of the shafts, and consequently the two blades of each shaft will be at a right angle to each other. One blade 42 of the upper shaft 41 is provided at its inner edge near its upper end with a short pin or shaft 44, which is journaled in a bearing-opening 42\*, formed in the opposite dasher. That blade 41 of the lower shaft 42 is provided at its inner edge near one end with a similar pin or shaft 44, which, like the upper companion-shaft, is similarly journaled in a bearing-opening 42\* of the opposite dasher. In this way it will be seen that the main shaft and short shaft aforesaid of each blade are journaled in different dashers, which maintains each pair of blades at a right angle to each other. The rotation of the crank-shaft through the medium of the gear and pinion will, it will be observed, cause a vertical reciprocation of the twin dasher-staffs, the reciprocation being alternate with relation to the dashers, so that as one descends the other ascends. The blades, being pivoted to each

of the staffs, will therefore be oscillated or vibrated, as will be readily understood.

By experience we have found that a churn thus constructed reduces to a minimum the time necessary to convert the cream to butter, and as will be readily apparent to those skilled in machinery, the power necessary for operating the dashers and their staffs is very slight, the staffs being reciprocated very rapidly during a comparatively slow revolution of the main drive or gear wheel. In the oscillations of the paddles, it will be noticed that the cream is violently agitated in every direction, whereby a most complete separation of the globules takes place. Such a movement differs vastly from the various movements heretofore employed, where the same was uniform, and it will be observed that as a portion of cream is thrown from the end of one blade or paddle in one direction, it is caught by a reversely-moving companion blade or paddle and thrown in a direction at an angle thereto.

Having thus described our invention, what we claim is—

1. In a churn, the combination, with a pair of dasher-staffs and mechanism for reciprocating the same alternately in opposite directions, of a blade provided at one end with a pair of shafts, one shaft being journaled in one of said staffs and the remaining shaft in the other staff, substantially as specified.
2. The combination, with a pair of alternately-reciprocating dasher-staffs, one of which is provided with a bearing, of a transverse dasher-shaft mounted in the bearing and extending to each side of the same, opposite dasher-blades secured to the ends of the shaft and disposed at a right angle to each other, one of said blades being provided with a bearing-stud loosely pivoted in the opposite staff, substantially as specified.
3. The combination, with opposite staffs and means for alternately reciprocating the same, each of said staffs being provided with upper and lower bearing-openings, of transverse shafts passed through the upper opening of one staff and the lower opening of the opposite staff, and each shaft provided at its ends with blades or dashers, that at one end being arranged at a right angle to that at the other, and studs mounted at one of the ends of one blade of each pair and loosely pivoted in the opposite or corresponding opening of the opposite staff, substantially as specified.
4. The combination, with a churn-cover having an opening, a crank-shaft having double cranks oppositely disposed and standards for the same, of means for rotating the shaft, plates having S-shaped slots mounted on the cranks and terminating at their lower edges in notched extensions, and a pair of dasher-staffs provided at their upper ends with bifurcated castings having studs near their upper ends for engaging the upper notches of the extension of the cam-plates,



and set bolts and nuts for engaging the lower notches thereof, and a shoulder for taking under said extensions, substantially as specified.

5 The combination, with a churn-cover having an opening, standards arranged at each side of the opening, a horizontal frame extending from one of the standards parallel with the opening and provided with guide-openings, of a crank-shaft and means for rotating it, said shaft having oppositely-disposed cranks mounted in the standards, plates having S-shaped slots mounted in the cranks, guide-pins depending from the plates and entering the guide-openings, and a pair of 15 dasher-staffs connected with said guide-plates, substantially as specified.

6. The combination, with the churn-cover, the opposite standards, the crank-shaft, the cam-plates and the dasher-staffs connected 20 with the plates, and the pinion connected with the crank-shaft, of a plate terminating at its front end in a bearing, a master-gear mounted on the bearing provided with a handle and meshing with the pinion, said plate being provided with a rear bifurcation and an intermediate notch, a headed lug mounted on the 25 cover for the reception of the bifurcation, and a bolt passed through the cover and

adapted to be inserted within the notch, and provided with a set-screw, substantially as 30 specified.

7. The combination, with the cover having an opening and a standard terminating at its upper end in a bearing arranged at one end of the opening, of a cast-metal plate bolted 35 to the cover and having a headed stud and at one end a vertical standard provided at its upper end with a bearing, a dasher-operating staff mounted in the bearings of the two standards and provided at one end with a pinion, 40 a plate terminating at one end in a bearing and at its opposite end in a bifurcation for insertion under the headed stud and near its bearing having a notch, a bolt passed through the plates, a set-screw for the bolt, and a master-gear mounted on the bearing of the removable plate and engaging the pinion, substantially as specified. 45

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses. 50

NIAL R. SHEETS.

MARSHALL TILMAN GOFORTH.

Witnesses:

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A. H. GOFORTH.