Aug. 30, 1949. C. TISELL 2,480,273

CRANK MOTION FOR STEAM ENGINES AND THE LIKE

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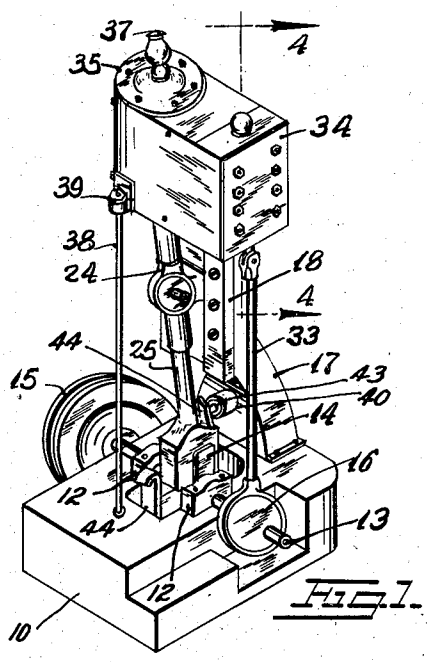


FIG. 1.

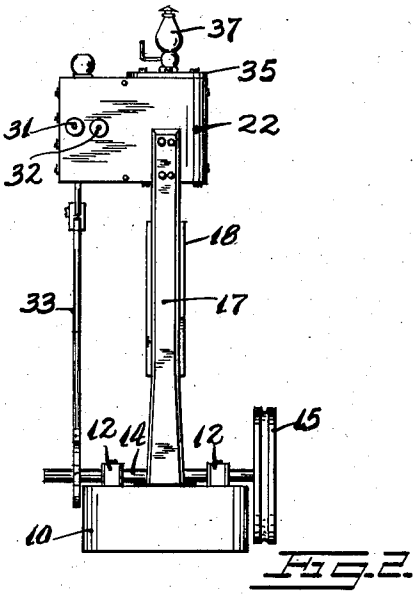


FIG. 2.

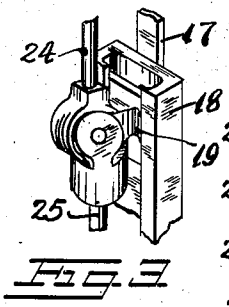


FIG. 3.

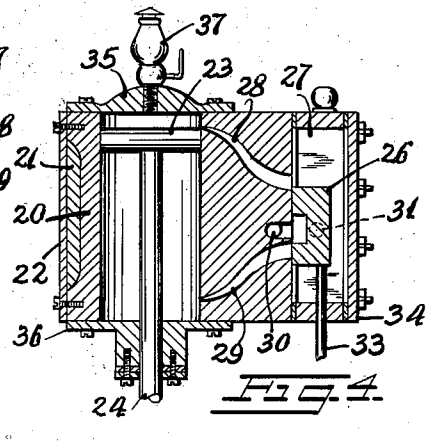


FIG. 4.

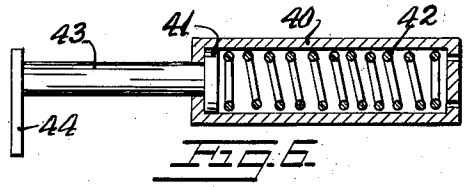


FIG. 6.

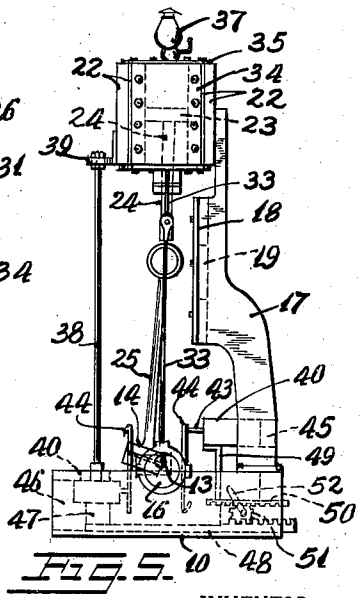


FIG. 5.

INVENTOR.
Charles Tisell, deceased
BY Gerda Tisell, executrix
BY
Zoltan Holachek
ATTORNEY

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CRANK MOTION FOR STEAM ENGINES AND THE LIKE

Charles Tisell, deceased, late of Bronx, N. Y., by Gerda Tisell, executrix, Bronx, N. Y.

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3 Claims. (Cl. 74—36)

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This invention relates to new and useful improvements in a crank motion for steam engines and the like.

More particularly, the invention proposes the construction of a steam engine which is characterized by a means arranged in connection with its piston rod for urging the rod in a proper direction in a manner to insure forward rotation of the engine when starting.

Still further the present invention proposes that the piston rod urging means be a resilient means for urging the crank portion to rotate in one direction past its dead centers, while starting the steam engine.

Another object of the invention is the construction of a device as mentioned which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a perspective view of a steam engine constructed in accordance with this invention.

Fig. 2 is an end elevational view of Fig. 1.

Fig. 3 is a fragmentary perspective view of the track portion of the vertical bracket, and the adjacent associated parts.

Fig. 4 is a fragmentary enlarged vertical sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a side elevational view of the steam engine.

Fig. 6 is a fragmentary enlarged sectional view through one of the resilient means illustrated in the bottom portion of steam engine.

The steam engine, in accordance with this invention, includes a base 10 having a top recess 11. Bearings 12 are mounted on said base 10 to the sides of said recess 11. A crankshaft 13 is rotatively mounted in the bearings 12 and has its crank portion 14 engaging into and out of said top recess 11 as the crankshaft rotates.

A flywheel 15 is mounted on one end of the crankshaft 13 to one side of the base 10. An eccentric cam 16 is mounted on the other end of the crankshaft 13 to the other side of the base 10. A vertical bracket 17 is mounted on the back portion of the base 10.

The vertical bracket 17 is provided with a vertical track 18. A slide 19 is vertically slidably mounted in the vertical track 18. A cylinder 20

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is mounted on the top of the bracket 17. This cylinder 20 has recessed sides which are filled in with heat insulating material 21. A metal jacket 22 is engaged around the cylinder 20.

A piston 23 is slidably mounted in the cylinder 20. A piston rod 24 connects with the piston 23 and extends downwards and connects with the slide 19. A connecting rod 25 pivotally connects with the slide 19 and with the crank portion 14.

A conventional slide valve 26 is slidably mounted in a steam chest 27 and controls the ports 28 and 29 to the top and to the bottom of the cylinder 20. Said slide valve also controls the exhaust port 30. The steam chest 27 is provided with an inlet 31. The exhaust port 30 connects with a steam outlet 32. A connecting rod 33 extends from said slide valve 26 and extends downwards and connects with the cam 16.

The steam chest 27 is closed by a cover 35. The cylinder 20 is closed by a top cover 35 and a bottom cover 36. A flow cock 37 connects with the top cover 35. A brace 38 is mounted between the front portion of the base 10 and a bracket 39 mounted on the casing 22.

Means is associated with the bottom portion of the connecting rod 25 for resiliently urging the connecting rod in one direction past the dead centers of the crank 14 for insuring that the engine turns in the correct direction while starting. More specifically, the base 10 and bracket 17 of the steam engine support horizontal cylinders 40.

Each cylinder 40 is provided with a piston 41 normally urged outwards by an internal spring 42. Each piston 41 connects with a piston rod 43 provided with a rigid head 44. One of the cylinders 40 is slidably mounted upon the bracket 17, and more specifically, through an opening 45 in said bracket 17. The other cylinder 40 is slidably mounted in an opening 46 in the base 10. One of the cylinders 40 is supported on a block 47 mounted on a slidably mounted rack 48. The other cylinder 40 is supported by a bracket 49 which connects with a slidably mounted rack 50. The racks 48 and 50 are opposed to each other and are engaged by a gear 51. This gear 51 is connected with a handle 52 by which it may be manually turned.

In the position of the parts shown in Fig. 5 the heads 44 are in positions to resiliently engage against the bottom end of the connecting rod 25 for making certain that the engine runs in one direction. Assuming the engine to run counter-clockwise, as illustrated in Fig. 5, the bottom portion of the connecting rod 25 is press-

ing inwards against one of the heads 44 so that when it reaches the bottom of its stroke this head 44 will push it towards the right and so insure turning of the crank counterclockwise. As the bottom portion of the connecting rod 25 moves upwards, it will engage and press outwards the other one of the heads 44 so that when it reaches the top end of its stroke this latter-mentioned head will resiliently engage against it and move it counterclockwise.

After the engine gets started the flywheel will keep it running in the correct direction. Then the handle 52 is turned so as to move the racks 48 and 50 to move the cylinders 40 outwards into positions in which the heads 44 are out of reach of the bottom portion of the connecting rod 25. The steam engine now will continue running without engaging the heads 44.

The operation of the steam engine is conventional. However, the construction embodies numerous advantages. One advantage resides in the construction of the base 10. Another in the arrangement of the vertical bracket 17 and the manner in which it supports the cylinder 20. Still another, in the arrangement of the brace 38. Further features reside in the arrangement and operation of the heads 44.

It is to be understood that suitable electrical drive means may also be provided for coupling the steam engine to an electrical driving means.

While illustrated and described is the preferred embodiment of the invention, it is to be understood that the invention is not limited to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described the invention, what is claimed as new, and desired to secure by United States Letters Patent is:

1. The combination with a crank shaft having bearings and a fly wheel and a pitman having one end connected to the crank shaft to turn the same; of heads disposed on opposite sides of the connected end of the pitman, piston rods connected with said heads, cylinders in which said piston rods operate, springs in said cylinders compressible by said piston rods, a gear rack connected with each cylinder, and a manually turned gear between the gear racks to permit of the manual shifting of the heads to control the direction of rotation of the crank shaft and to permit the displacement of the heads from engagement with the pitman.

2. In combination with an engine having a crank shaft and a pitman connected at one end to the crank shaft for turning the same, means for controlling the direction of rotation of the crank shaft when starting the engine, comprising slidably mounted cylinders located on opposite sides of the connected end of the pitman, piston rods slidable within said cylinders and having extended ends directed toward the connected end of the pitman, heads mounted on the extended ends of said piston rods, resilient means within said cylinders holding said piston rods in an extended position in which said heads will be projected into the path traversed by the connected end of the pitman, and means for sliding said cylinder to move said heads out of the path traversed by the connected end of the pitman.

3. In combination with an engine having a crank shaft and a pitman connected at one end to the crank shaft for turning the same, means for controlling the direction of rotation of the crank shaft when starting the engine, comprising slidably mounted cylinders located on opposite sides of the connected end of the pitman, piston rods slidable within said cylinders and having extended ends directed toward the connected end of the pitman, heads mounted on the extended ends of said piston rods, resilient means within said cylinders holding said piston rods in an extended position in which said heads will be projected into the path traversed by the connected end of the pitman, and means for sliding said cylinder to move said heads out of the path traversed by the connected end of the pitman, said cylinder sliding means, comprises opposed racks formed on said cylinders and having their teeth directed toward one another, and a manually turnable gear between said racks meshing with the teeth thereof to be turned in one direction or the other for sliding the cylinders in opposite directions relative to one another.

GERDA TISELL,
Executrix of the Estate of Charles Tisell, Deceased.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
D. 13,971	Whitlock	June 5, 1883
58,478	Reynolds	Oct. 2, 1866
66,527	Sims	July 9, 1867
68,482	Bickwell	Sept. 3, 1867
115,073	Lull	May 23, 1871
314,129	Howard	Mar. 17, 1885
505,004	Reynolds	Sept. 12, 1893
711,494	Grider	Oct. 21, 1902
1,141,323	Dryden	June 1, 1915

FOREIGN PATENTS

Number	Country	Date
195,561	Germany	Feb. 20, 1908