March 9, 1943. C. H. PAJEAU 2,313,357

TOY CONSTRUCTION BLOCK

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Fig. 1

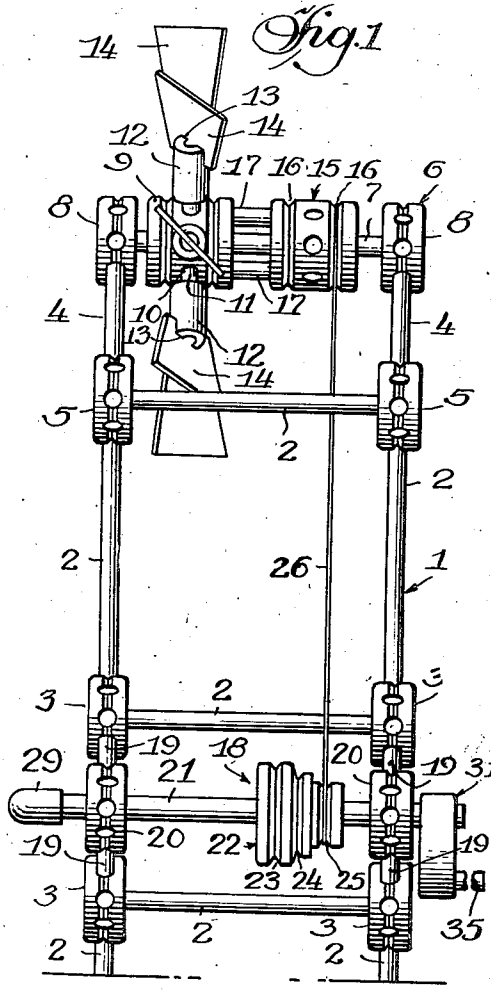
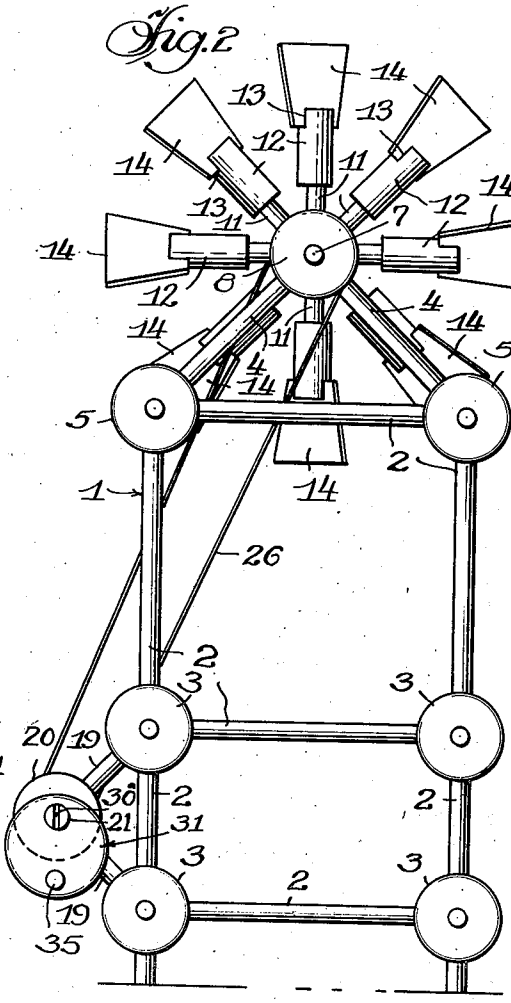


Fig. 2



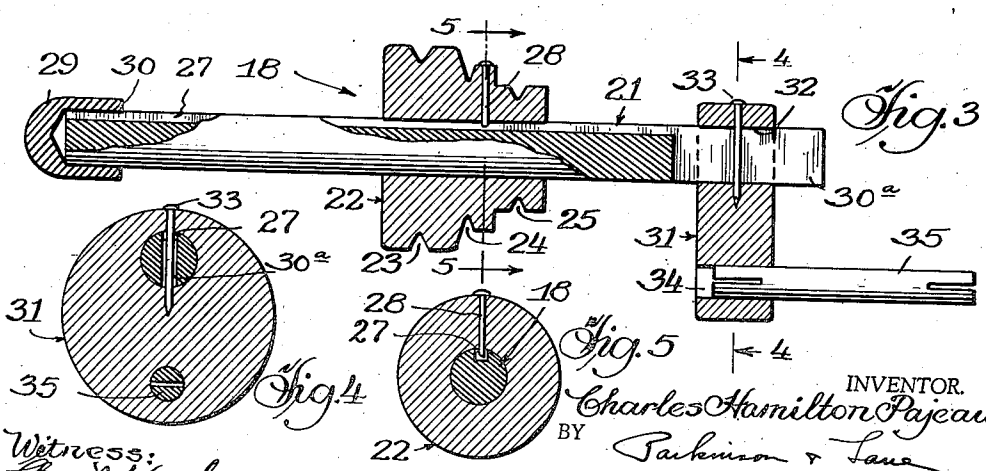


Fig. 3

Fig. 4

Fig. 5

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TOY CONSTRUCTION BLOCK

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1 Claim. (Cl. 46—26)

The invention relates to toy construction blocks and more particularly to a windlass construction adapted to provide manual motive power to models made with wooden toy construction blocks. The construction blocks of the present invention are of the kind in which disks, rods, connecting elements, wind vanes and other pieces of large variety of shapes and sizes are provided for assembly particularly by children, into models of various structures and mechanisms of many shapes, sizes and types without the use of pins, nails, nuts, bolts or other fastening elements. The pieces are connected by providing the blocks, usually disk-like members, with wells into which the ends of the rods are inserted. The rods are of slightly greater circumference than the wells and have slotted ends, the sides of which are pressed together prior to insertion and which expand after entry into the well to be held frictionally in the well.

These blocks are adapted to form models of various structures, many of which, such as a windmill, have rotatable or revolving parts. It has heretofore been the practice to provide mechanical sources of power for these moving parts. In some instances small motors have been hooked up by pulley arrangements to the revolving shaft for turning the parts, or the parts have been provided with wind vanes, against which the wind from an electric fan has been directed. The use of mechanical sources of power has not been wholly satisfactory for a number of reasons. In the first place, they are expensive. In the second place, the model must be very carefully and accurately put together in order for the mechanical power to operate the model satisfactorily. Should the parts be improperly joined together so that they stick, they will not operate when a fan is used, and if a small motor is used, it might be burned out. If the parts were put together so as to be too loose, the motor might cause some of the parts to come apart, resulting in destruction of the model and possible damage to many of the parts.

The present invention is designed to eliminate these difficulties by providing a novel, positively connected windlass means, operated by hand, for furnishing motive power to these rotatable parts.

It is an object of the present invention to provide a novel, manually operated windlass for the revolving or movable parts of a model made from toy construction blocks.

It is a further object to make a windlass from certain of the blocks making up the present construction sets, with a minimum of alteration in such blocks.

It is a further object to provide a novel windlass, the parts of which may be easily and inexpensively manufactured and which may be easily assembled and positively and successfully operated, without expense, thereby eliminating the necessity for the mechanical power devices heretofore used.

It is a further object to provide a windlass the elements or parts of which are positively engaged or connected as distinguished from frictional engagement.

Other objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly and operation, and such further objects, advantages and capabilities as will later more fully appear and are inherently possessed thereby.

The invention further resides in the construction, combination and arrangements of parts illustrated in the accompanying drawing, and while I have shown therein a preferred embodiment, it is to be understood that the same is susceptible of modification and change, and comprehends other details, arrangements of parts, features and constructions without departing from the spirit of the invention.

In the drawing:

Fig. 1 is a side elevational view of a model of a windmill made of construction blocks provided with the novel windlass construction of the present invention.

Fig. 2 is a front elevational view of the model shown in Fig. 1.

Fig. 3 is an enlarged view in side elevation, partly in vertical cross section, of the windlass construction shown in Figs. 1 and 2.

Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is a vertical, sectional view taken on the line 5—5 of Fig. 3.

Referring more particularly to the embodiment of the invention disclosed in the drawing, there is shown a windmill having a supporting frame 1 composed of a plurality of rods 2 connected by disks 3 and on which is mounted, by means of rods 4 projecting from disks 5 at the upper four corners of the frame 1, the windmill structure 6 comprising a rod 7 extending between disks 8 mounted on the ends of the rods 4. On this rod 7 is loosely mounted the windmill proper comprising a disk 9 provided with a series of wells 10, in each of which is inserted a rod 11 on the outer end of which is a hollow, cylindrical

wind vane connector element 12 provided with a slot 13 in which is inserted a wind vane 14. Also loosely mounted on the rod 7 is a cylindrical pulley wheel connecting element 15 provided with circumferential grooves 16. The wind wheel disk 9 and the pulley disk 15 are both provided with wells adapted to receive a plurality of longitudinal rods 17, whereby to key or lock the two disks together.

The windlass construction 18 is mounted at one side of the lower part of the frame and is attached to the frame by means of rods 19 projecting from the disks 3, the outer ends of such rods being inserted in wells provided in a pair of disks 20 in which the shaft 21 of the windlass device is rotatably mounted through central openings or bearings in the disks. On the shaft is a pulley wheel connecting element 22 preferably provided with three circumferential grooves 23, 24 and 25 of different circumference, each adapted to receive the belt 26 connecting the pulley 22 on the windlass with the pulley 15 on the wind wheel shaft. The windlass shaft 21 is provided with longitudinal groove 27 adapted to receive pin 28 in the pulley wheel 22 whereby to key the pulley wheel to the shaft so that the shaft will rotatably drive the pulley wheel but permitting longitudinal sliding movement of the wheel 22 on the shaft.

At one end of the shaft 21 is a cap 29 providing a shoulder 30 adapted to prevent the shaft from being pulled through the adjacent bearing 20. At its other end the shaft 21 is provided with a slit 30*a*, which in part is a continuation of the groove 27. On this end of the shaft is mounted a disk 31 provided with opening 32 through which the end of the shaft is adapted to be placed. The opening 32 is preferably a little smaller than the circumference of the shaft 21 but of sufficient size to receive the end of the shaft 21 when the slot 30*a* is slightly closed whereby the disk 31 may be placed on the end of the shaft and, as it approaches the end of the slot, will frictionally engage the shaft 21 and be held in place against further longitudinal movement. Nail or pin 33 is provided in the disk 31 to key it to the shaft 21 and prevent slippage between the two parts when the shaft and disk are revolved. This disk provides a crank for the shaft 21 and also a stop member to prevent the end of the shaft sliding inwardly through the opening or bearing in the adjacent disk 20. The opening 32 is spaced from the center of the disk 31 and on the other side of the center is opening 34 adapted to receive the slitted end of a rod 35 which rod provides a handle for rotating the disk and with it, the shaft 21, pulley, 22, and hehce revolve the windmill 6 about its shaft 7 by means of the belt 26 and pulley 15.

It will be noted that the wind wheel assembly may be moved longitudinally on the shaft 7 and that the pulley wheel 22 is also longitudinally movable on the shaft 21 whereby grooves on the two pulley wheels 15 and 22 around which it is desired to place the belt 26 may be placed directly opposite each other.

As shown the drive shaft is of greater diameter than the other rods, the latter differing only in length. These other rods all have slotted ends to facilitate their insertion into the wells or openings (see Fig. 3). If desired, the drive shaft may be of the same diameter as the other rods to further decrease the manufacturing cost of the device.

While the drawing discloses a model of a windmill made of toy construction blocks, my invention is not limited to such a model and applies to any model or construction made of such blocks and having parts which it is desired to revolve by use of the novel windlass construction disclosed and claimed herein or its equivalent.

Having thus described my invention, I claim:

Manual drive means for a driven rotatable element fixed to a pulley wheel on a shaft in a toy construction block model in one part thereof, comprising a plurality of bearings in another part of said model, a driving shaft rotatably mounted in said bearings, said driving shaft having a longitudinal slot along one side thereof, a pulley wheel on said driving shaft, a pin extending through a portion of said pulley wheel and into said slot, the last mentioned pulley wheel and pin being slidable as a unit longitudinally of the driving shaft and rotatable therewith, a disk having a plurality of off-center openings therein, said disk being positioned adjacent the exterior end of one of said bearings, the end portion of the driving shaft extending through one of said off-center openings, a pin extending through a portion of said disk and into an opening in said driving shaft to lock the disk and driving shaft together for rotative movement, said disk acting as a stop member to substantially prevent longitudinal movement of the driving shaft in its bearings in one direction, a rod extending into another of said off-center openings in the disk and being frictionally held therein, said disk and rod providing a crank and handle for turning said driving shaft, a belt operatively connecting said pulley wheels, said pulley wheels being longitudinally slidable on their respective shafts to permit alignment of one pulley wheel with the other, a stop member on the other end of the driving shaft to prevent excess movement of the driving shaft in the other direction, said crank and handle being applicable to and removable from the driving shaft as a unit.

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