

I. L. WOLKOW.
TWISTING MACHINE.
APPLICATION FILED NOV. 27, 1911.

1,039,876.

Patented Oct. 1, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

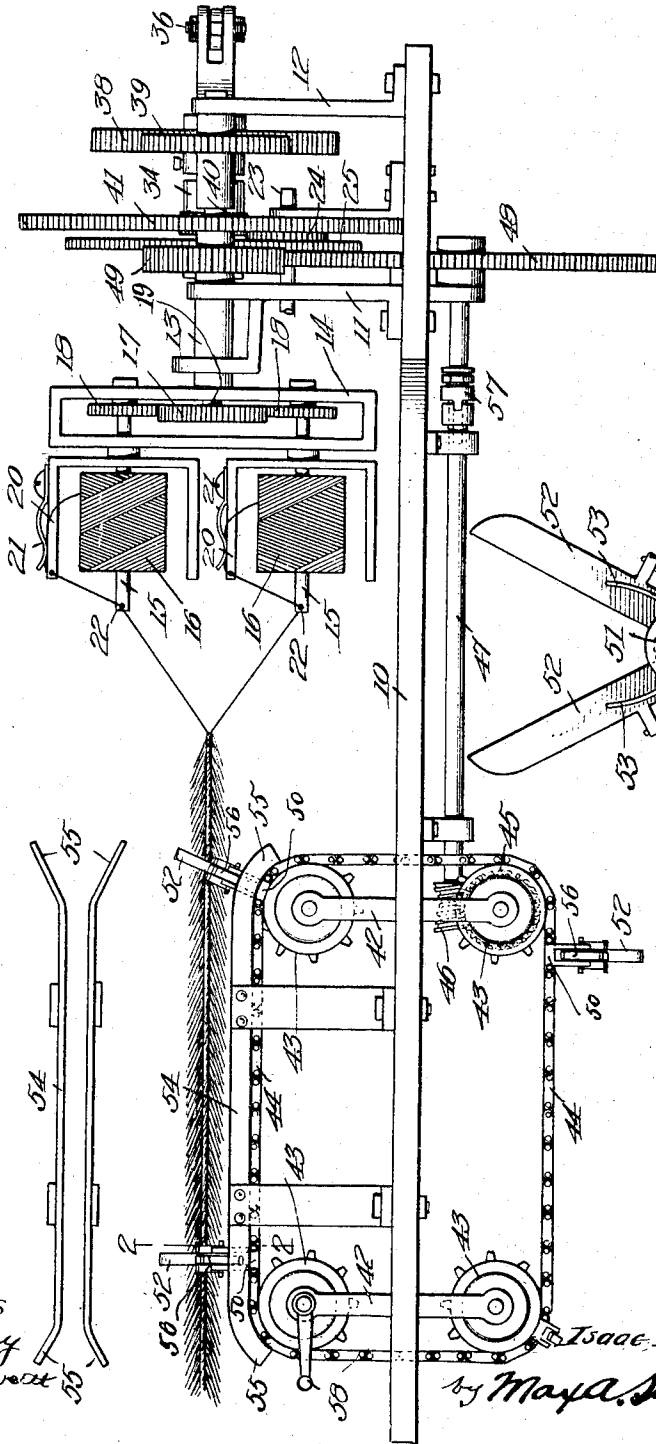


Fig. 2.

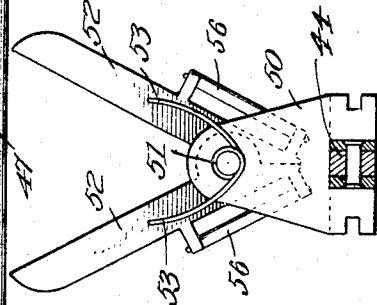
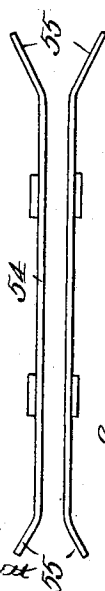


Fig. 3.



WITNESSES
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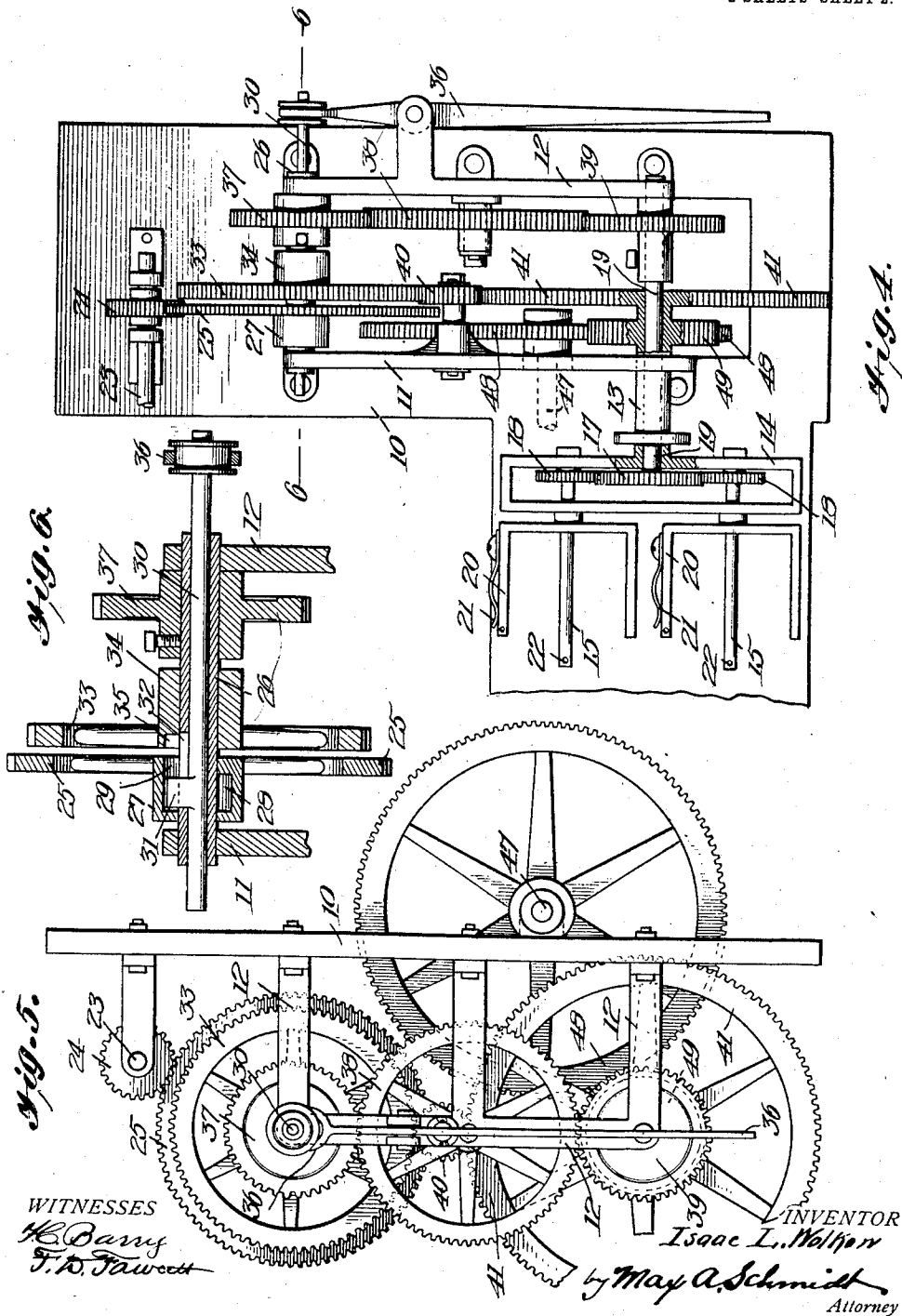
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

ISAAC LEO WOLKOW, OF LOUISVILLE, KENTUCKY.

TWISTING-MACHINE.

1,039,876.

Specification of Letters Patent.

Patented Oct. 1, 1912.

Application filed November 27, 1911. Serial No. 662,608.

To all whom it may concern:

Be it known that I, ISAAC L. WOLKOW, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Twisting-Machines, of which the following is a specification.

The present invention is a machine for making the hair structure described in my Patent No. 1,004,130, dated September 26, 1911, said structure consisting of strands of braided twine or other cord which are twisted together, and between which twisted strands are placed and held tufts of hair, wool or cotton.

It is the object of the invention to provide a simple and efficient machine for the purpose stated, and to this end it consists in a novel construction and arrangement of parts to be hereinafter described and claimed.

In order that the invention may be better understood, reference is had to the accompanying drawings in which—

Figure 1 is a side elevation of the machine; Fig. 2 is an enlarged cross-section on the line 2—2 of Fig. 1; Fig. 3 is a plan view of the track hereinafter referred to; Fig. 4 is an enlarged plan view, partly broken away, of the drive gear; Fig. 5 is an end view of the drive gear, and Fig. 6 is a section on the line 6—6 of Fig. 4.

Referring specifically to the drawings, 10 denotes a suitable base which supports the mechanism. At one end of the base are mounted bearings 11 and 12 which support the various shafts of the gearing to be presently described.

In the bearing 11 is journaled a hollow, horizontal shaft 13 carrying at one of its ends a bobbin-frame 14. In this frame are journaled two spindles 15 extending parallel to the shaft 13 and carrying the bobbins or spools of cord 16. The spindles are rotatable in the same direction through a gear 17 in mesh with gears 18 on the respective spindles. The gear 17 is fast on a shaft 19 passing loosely through the shaft 13. The spindles carry arms 20 having spring tension devices 21 to which the cord passes from the spools. From the tension devices the cord extends to the outer end of the spindles and is threaded through an eye 22 therein.

At 23 is indicated a main drive shaft

which receives motion from a suitable source of power which latter need not here be illustrated as it forms no part of the present invention. On this shaft is fast a pinion 24 which is in mesh with a spur gear 25 loosely mounted on a hollow shaft 26 supported at its ends in the bearings 11 and 12. In the hub 27 of the gear 25 is a cavity 28 having in one of its end walls a key-way or slot 29. In the bore of the shaft 26 is mounted, to slide lengthwise therein, a stem 30 carrying a key 31 which extends sidewise through a longitudinal slot 32 in the side of said shaft and enters the cavity 28. On the shaft 26 is also loosely mounted a spur gear 33 having in its hub 34 a key-way 35 which is opposite and adjacent to the key-way 29. When the stem 30 is actuated to insert the key 31 into the key-way 29, the motion of the gear 25 is transmitted to the sleeve 26, and when the key is inserted into the key-way 35 also, the motion of the sleeve is transmitted to the gear 33. A suitable operating lever 36 is provided for actuating the stem 30 to engage the key with the key-ways as herein described and for disengaging the same. The width of the key is such that it may seat in both key-ways at the same time, and the length of the slot 32 is such as to permit the key to be moved a sufficient distance to come to this position.

On the shaft 26 is fast a pinion 37 which is in mesh with a spur gear 38 which latter, in turn, is in mesh with a pinion 39 fast on the shaft 19, whereby the motion of the shaft 26 is transmitted to said shaft 19, and through the gears 17 and 18 to the spindles 15. The gear 38 is supported by the bearing 12.

The gear 33 is in mesh with a pinion 40, which latter is in mesh with a spur gear 41 fast on the shaft 13. The pinion 40 is supported by the bearing 11. This gearing transmits the motion of the shaft 26 to the bobbin-frame 14.

It will be evident from the foregoing that, through the gearing herein described, the bobbin-frame 14 is rotated in one direction about its axis, and the spindles 15 are rotated in the opposite direction about their own axes. The bobbins therefore rotate and also have an orbital motion in the opposite direction, in view of which the cords are individually twisted in one direction while they are twisting on themselves in the other

direction. The gear ratio is such that the spindles rotate faster than the bobbin-frame.

The tufts of hair, wool or cotton are placed at suitable intervals between the twisted cords which produces the structure described in my patent hereinbefore referred to. The tufts may be fed between the cords by hand; or an automatic feeding device may be provided.

A traveling carrier is provided whereby the finished article is carried forward away from the machine, and the cords are unwound from the bobbins. This carrier is constructed and arranged as follows: On the base 10 are supports 42 which carry sprocket wheels 43. Four of these sprocket wheels are provided and they are so arranged that the endless chain 44 which connects the same travels in a substantially rectangular path, the upper run of the chain being horizontal, and the chain traveling in a direction so that said upper run travels forward, or away from the twisting mechanism. On the shaft of one of the sprocket wheels is a worm gear 45 which is in mesh with a worm 46 on a shaft 47 on which is fast a large spur gear 48 which latter is in mesh with a pinion 49 on the shaft 13. It will therefore be evident that the gear of the twisting mechanism, through the worm gearing herein described, also drives the carrier, the worm gearing transmitting motion to the sprocket wheel in a direction to drive the chain in the proper direction.

The chain 44 carries grippers which are constructed as follows: To a block 50 are pivoted, as indicated at 51, two opposed jaws 52 which are held open by a spring 53. The block is connected to the chain so as to travel with it. Above the upper run of the chain is mounted a track comprising two spaced parallel bars 54 extending parallel to the chain and having flared ends 55. The bars are so located that the grippers enter therebetween, and the space between said bars is such that they close the jaws when the latter come in contact therewith. On the outer surface of the jaws are anti-friction rollers 56 which roll along the inner surface of the bars. The jaws 52 close when they enter the contracted space between the bars 54, and upon leaving the same they are opened by the spring 53. A sufficient number of grippers are provided so that the finished article may be gripped at two points as clearly shown in Fig. 1. The shaft 47 is provided with a clutch 57, and to the shaft of one of the sprocket wheels 43 is fitted a crank handle 58.

The machine operates as follows: The two cords are threaded through the tension devices 21 and the eye 22 of the spindles 15, and their ends are tied together. The cords are then pulled out until the knot is above

the carrier, and held there while the shaft 47 is disconnected from the drive gear by operating the clutch 57. The crank handle 58 is now operated to position one of the grippers so that it may be engaged with the knotted end of the cords. The clutch 57 is now operated to connect the shaft 47 to the drive gear. The motor or other source of power being started, the stem 30 is pulled rearward until the key 31 enters the key-way 29, whereupon the spindles 15 are set in motion to give the individual twist to the cords. After a proper twist has been given the cords, the stem 30 is pulled still further until the key 31 enters the key-way 35 also, whereupon the bobbin-frame 14 is also put in motion to twist the cords upon themselves. The tufts of hair or other material are now placed between the cords as they are twisting on themselves, and the finished article is carried away by the traveling grippers as fast as it is formed, without any attention from the operator. At the forward end of the track the gripper jaws open and release the article which is at the same instant picked up by a gripper entering the track at the rear. The drive gear of the grippers will be so designed that the grippers are carried forward at the proper rate of speed.

The machine can be run at any speed desired, and by means of the lever 36 is always under control of the operator. The frame of the machine may also be widened and as many more spindles provided as are necessary to produce any kind of twisted cord.

It will, of course, be understood that the machine as illustrated can be varied in construction within considerable limits, without departure from the spirit of the invention.

I claim:

1. A twisting machine comprising a rotatable frame, rotatable spindles carried by the frame, means for driving the frame, means for driving the spindles in opposite directions from the frame, a drive shaft, and a disengageable connection between said shaft and the spindle-driving means, said connection being adjustable to connect the shaft to the frame-driving means subsequent to the starting of the spindle-driving means.

2. A twisting machine comprising a rotatable frame, rotatable spindles carried by the frame, driving means for the frame, means for driving the spindles in opposite directions from the frame, a drive gear, and means for connecting said drive gear with the aforesaid driving means of the spindle and the frame, said connecting means comprising a hollow shaft having a longitudinal slot, a stem slidably mounted in the bore of the hollow shaft, a key on the stem, said key projecting through the aforesaid slot,

5 a gear in mesh with the drive gear and
loosely mounted on the hollow shaft, and
having a key-way adapted to be engaged by
the key, a second loose gear on the hollow
shaft, said gear also having a key-way
adapted to be engaged by the key, gearing
between the hollow shaft and the spindle-
driving means, and gearing between the
second-mentioned loose gear and the frame-
driving means.

10 3. A twisting machine comprising a ro-
tatable frame, a hollow shaft carrying the
frame, rotatable spindles carried by the
frame, gears on the spindles for driving the
same in the opposite direction from the
shaft, a shaft mounted in the hollow shaft
and carrying a gear which is in mesh with
the spindle gears, a drive gear, and means
for connecting said drive gear with the
20 aforesaid driving means of the spindle and

the frame, said connecting means compris-
ing a hollow shaft having a longitudinal slot,
a stem slidably mounted in the bore of said
shaft, a key on the stem, said key projecting
through the aforesaid slot, a gear in mesh 25
with the drive gear and loosely mounted on
the last-mentioned hollow shaft, and having
a key-way for the key, a second loose gear on
the hollow shaft, said gear also having a
key-way for the key, and gearing between 30
the two hollow shafts, and between the sec-
ond-mentioned loose gear and the shaft
which is mounted in the first-mentioned hol-
low shaft.

In testimony whereof I affix my signature 35
in presence of two witnesses.

ISAAC LEO WOLKOW.

Witnesses:

CHAS. FITZGERALD,
MASSIE ARNETT.