

March 22, 1932.

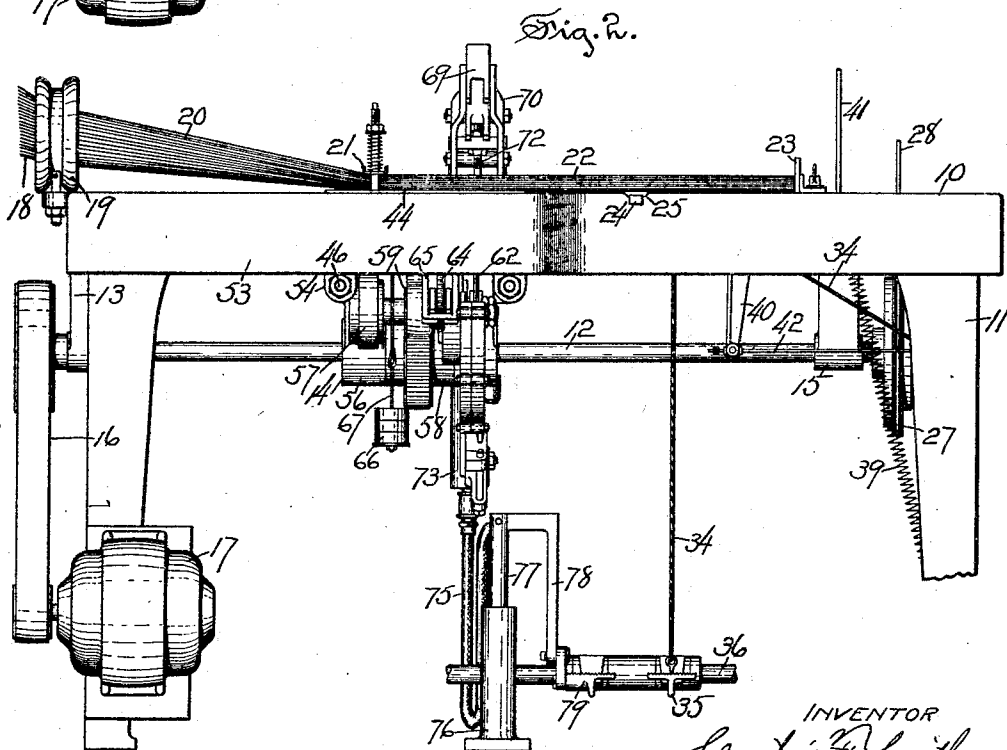
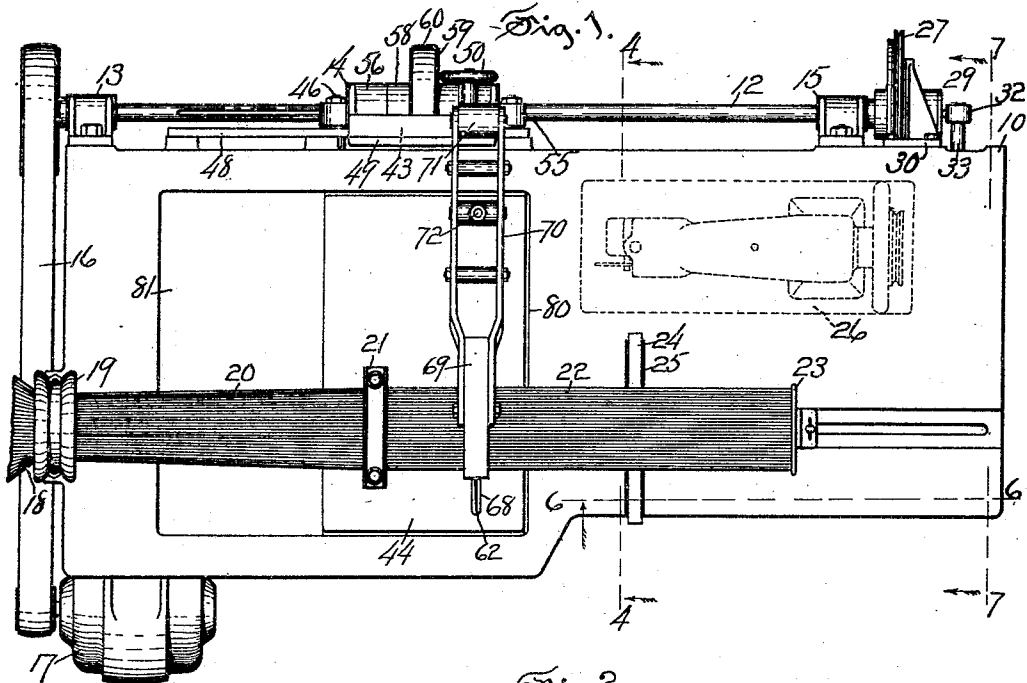
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1,850,853

MOP STRAND CUTTING MACHINE

Filed Dec. 4, 1928

6 Sheets-Sheet 1



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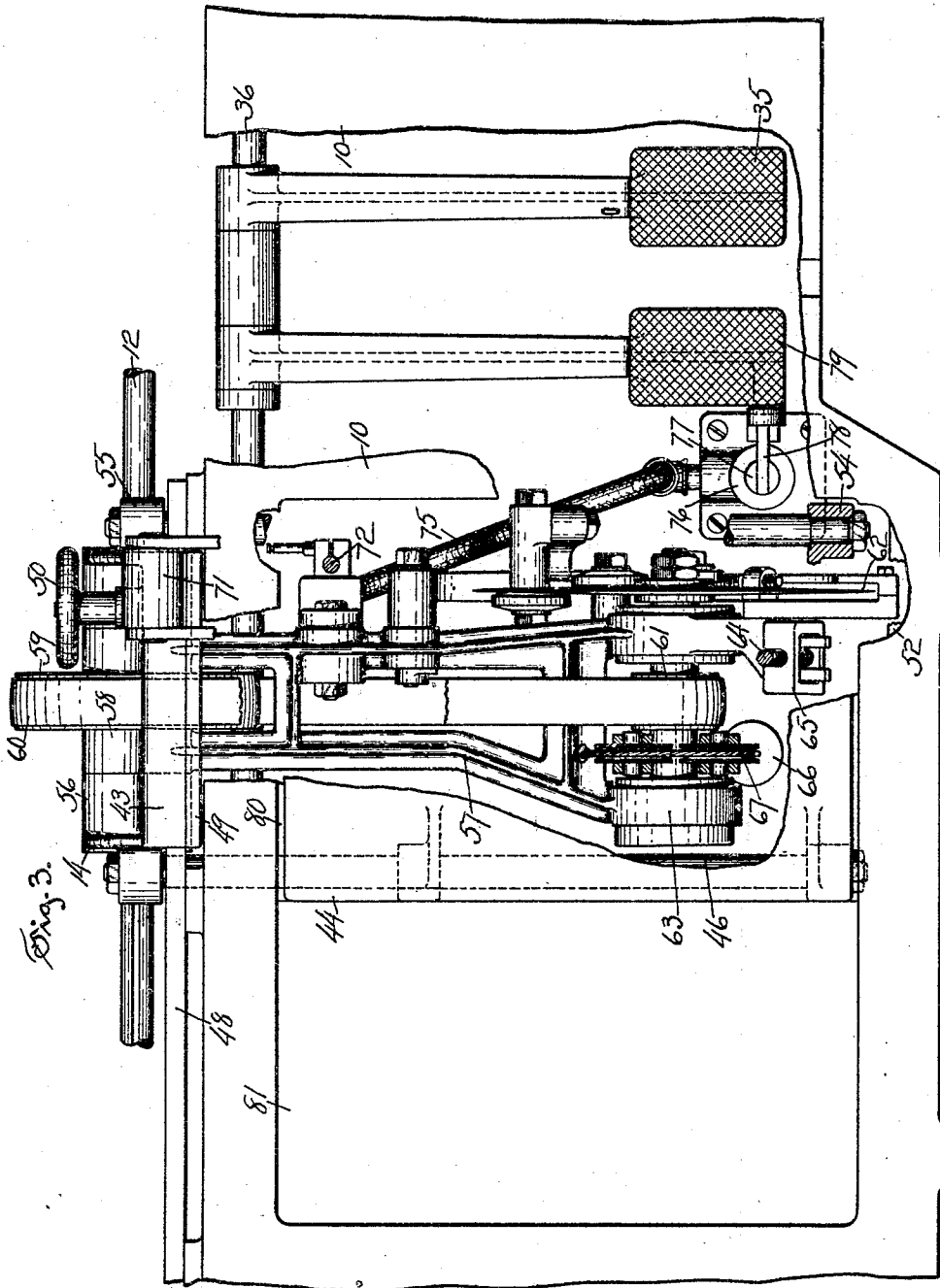
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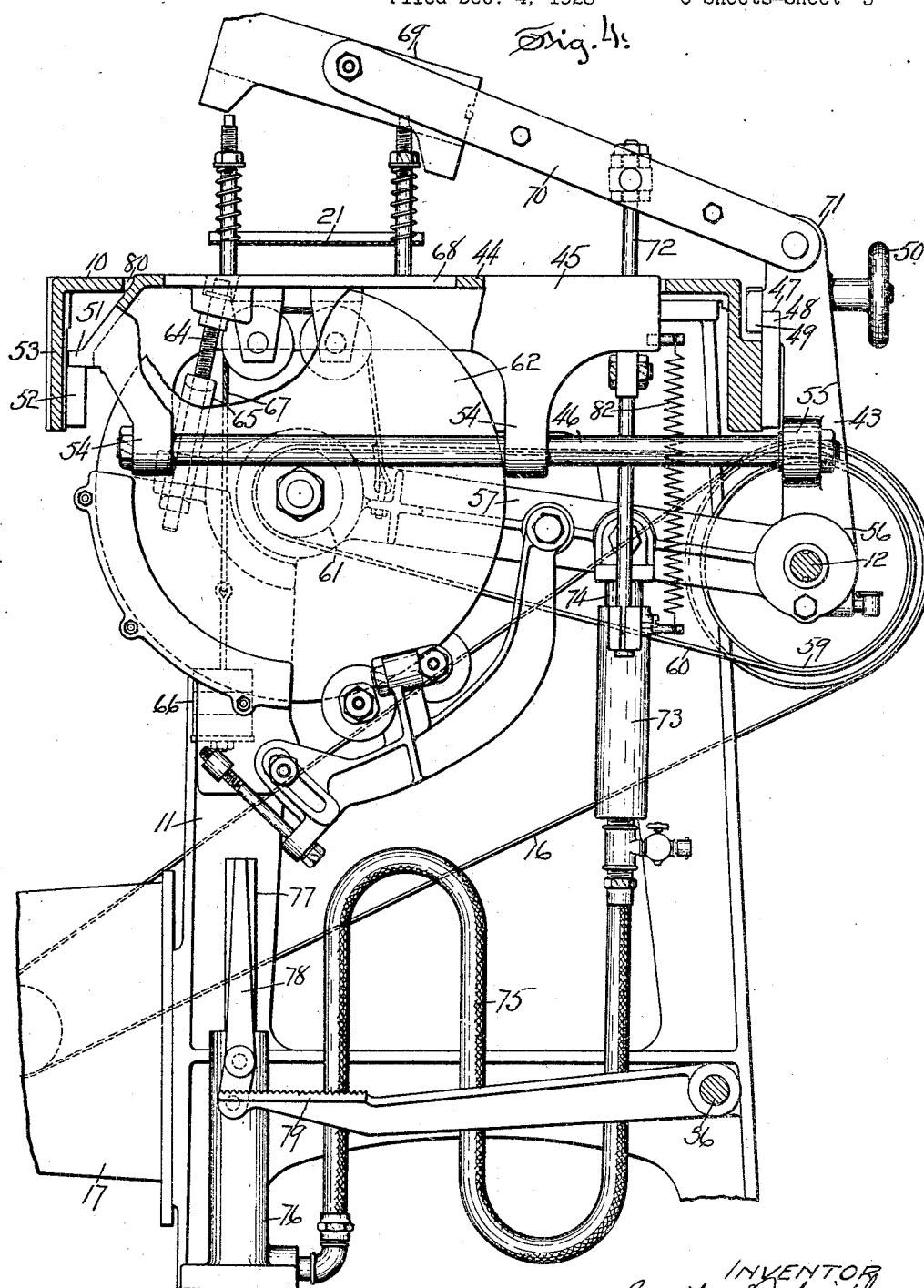
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6 Sheets-Sheet 3



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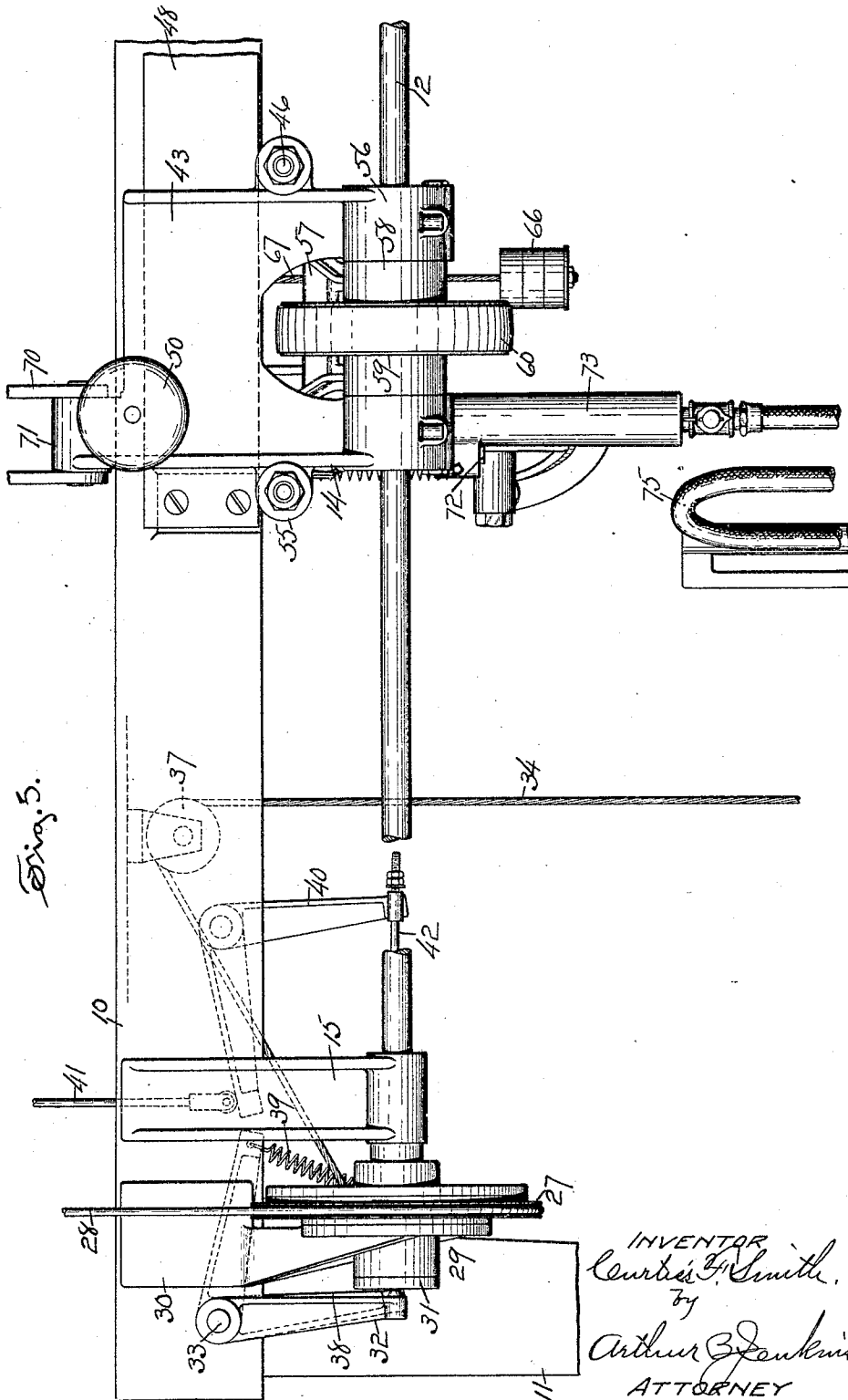
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MOP STRAND CUTTING MACHINE

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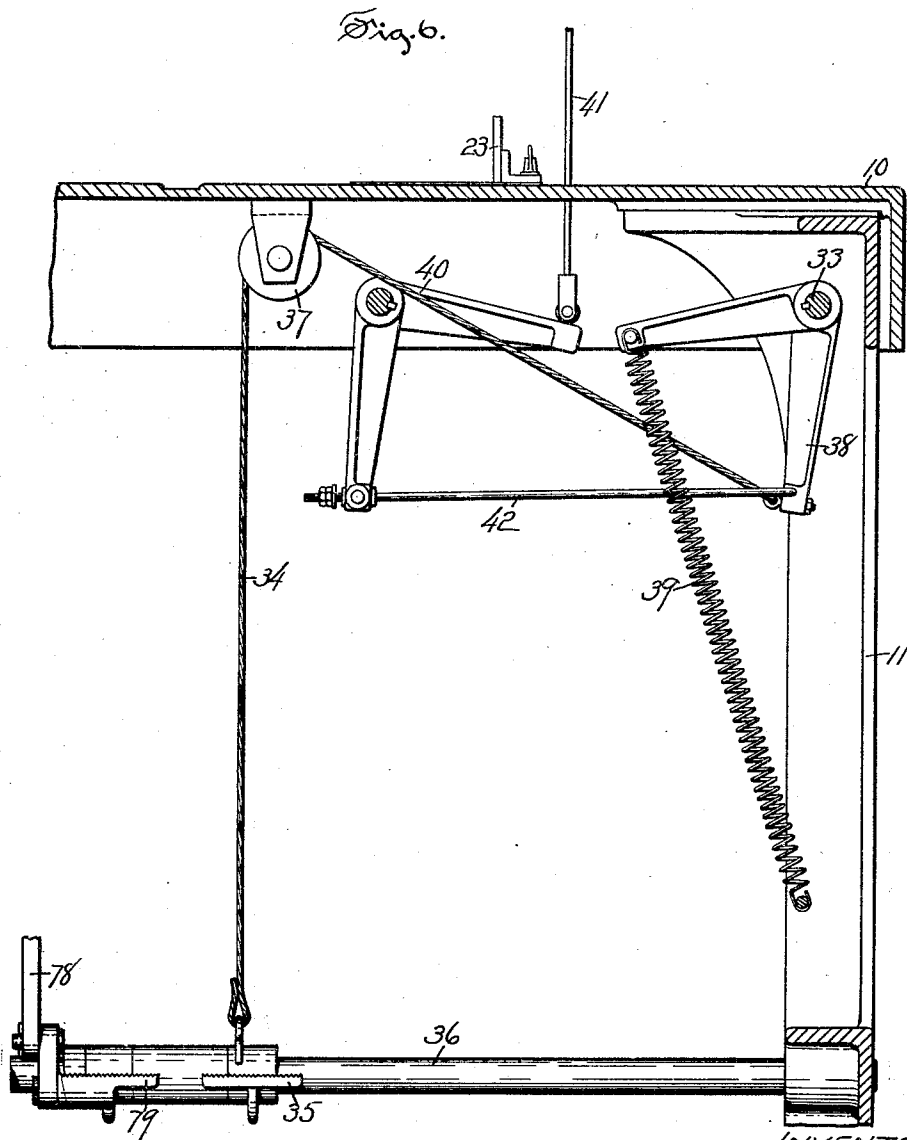
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MOP STRAND CUTTING MACHINE

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6 Sheets-Sheet 5



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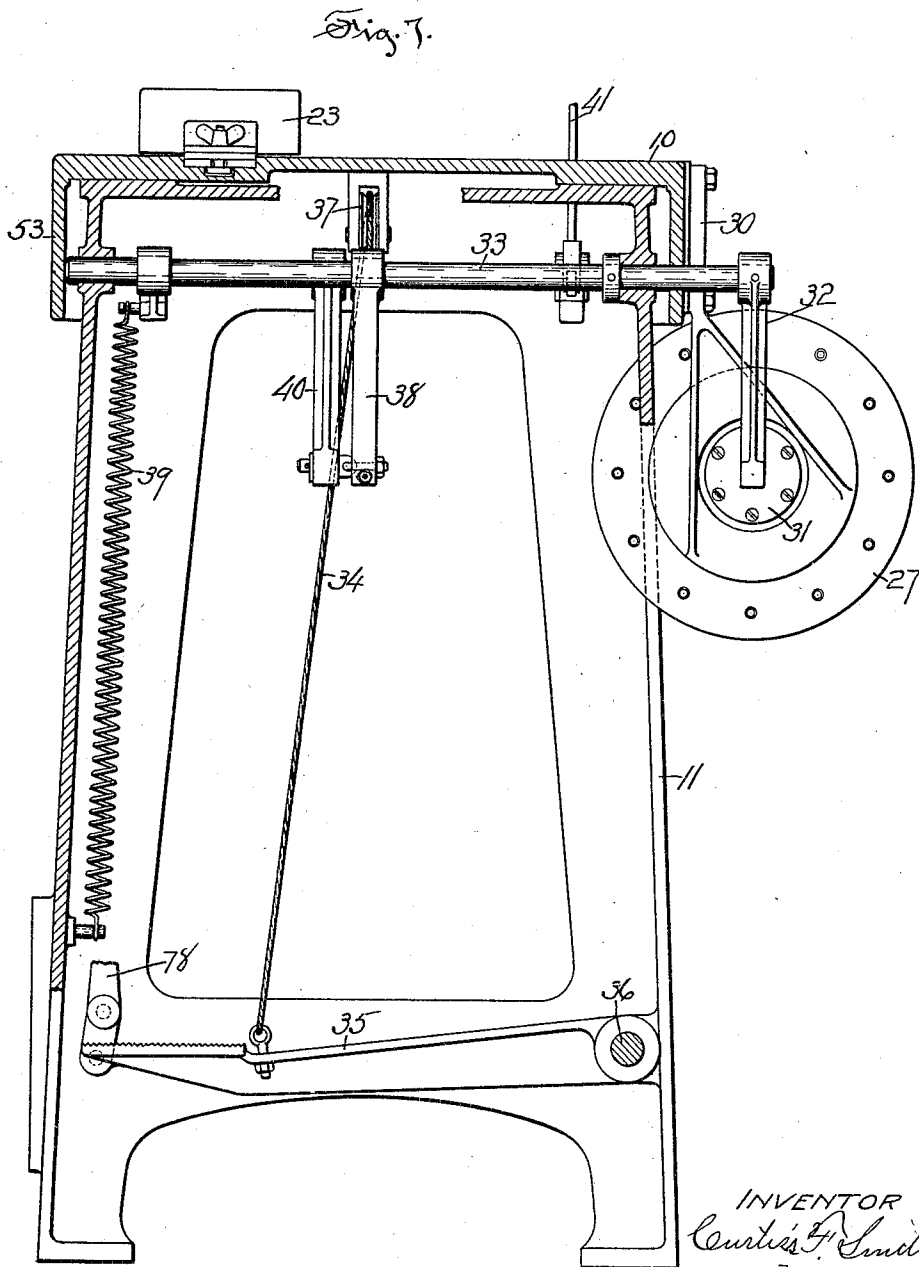
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MOP STRAND CUTTING MACHINE

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6 Sheets-Sheet 6



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MOP STRAND CUTTING MACHINE

Application filed December 4, 1928. Serial No. 323,764.

My invention relates more especially to that class of mop making machines that are particularly equipped for making mop structures composed of threads of cotton or other fibers that are arranged to be secured together, and an object of my invention, among others, is the production of a mop making machine of this type that shall be particularly convenient to operate, that shall enable structures to be formed in a rapid and efficient manner and that shall be safe in operation.

One form of a machine embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained is illustrated in the accompanying drawings in which—

Figure 1 is a plan view of my improved mop making machine.

Figure 2 is a view in front elevation of the same.

Figure 3 is a plan view, scale enlarged, of a portion of the machine with parts broken away to show construction, particularly of the cutter mechanism.

Figure 4 is a view in vertical cross section substantially on a plane denoted by the dotted line 4—4 of Figure 1, with parts broken away to show construction, the scale being the same as that of Figure 3.

Figure 5 is a view in rear elevation of a portion of the machine, scale enlarged.

Figure 6 is a view in vertical section substantially on a plane denoted by the dotted line 6—6 of Figure 1, scale enlarged, certain parts being omitted for the sake of clearness.

Figure 7 is a view in vertical section substantially on a plane denoted by the dotted line 7—7 of Figure 1, scale enlarged, certain parts being omitted for the sake of clearness.

In the accompanying drawings the numeral 10 indicates the table of my improved machine that may be supported in any suitable manner as by legs 11 disposed at the various corners. A driving shaft 12 is mounted in bearings in brackets 13, 14 and 15 secured to the table 10 and projecting downwardly from its back edge, and as shown in Figures 1 and 3 of the drawings. This

shaft 12 may be driven in any suitable manner, as by means of a belt 16 extending from any suitable source of power, as a motor 17 located in any suitable position, herein shown as being attached to one of the legs 11.

In the operation of making mops composed of threads of cotton or other suitable material many of such threads of indefinite length are assembled in a single mass 18 that is extended usually from several sources, each source supplying a fractional number of the threads contained in the whole mass. This mass is extended through an eye 19 that unites the threads into a single length 20 that is passed from the eye underneath a clamp 21, preferably spring pressed, whereby the length 20 is held with a yielding pressure sufficient to prevent backward movement of the mass by reason of the pull caused by the weight of the material back of the eye 19. A measured length 22 of the mass 20, which length is determined as by means of a gauge 23 adjustably secured on the table 10, is extended across a tape 24 of any suitable material located in a groove 25 in the top of the table. The tape is of sufficient length to allow it to be wrapped around the length 22 with its ends overlapping. The length 22 is now severed, in a manner to be hereinafter described, from the mass 20 and this severed length is pushed backwardly underneath the needle of a sewing machine 26, whereby the tape, together with the strands, are securely fastened together to comprise a mop structure. The details of construction of the sewing machine are not illustrated in the drawings herein as such machine may be of any suitable type and a detailed showing thereof will not be required for a clear understanding of the invention.

As a means for driving the machine a driving pulley 27 is secured to the shaft 12, this pulley preferably being grooved in a manner common to structures of this class and from which a belt 28 is passed to the driving wheel on the sewing machine and in a manner that will be readily understood. The pulley 27 is loose on the shaft 12 but is connected therewith as by means of a clutch 29 which may be of any ordinary form and con-

struction and which may be supported as by a bracket 30 from the rear of the table 10, and as shown in Figure 5 of the drawings. This clutch comprises a clutch member 31 actuated as by means of a clutch arm 32 secured to a clutch operating shaft 33 rotatably mounted in a frame constituting the legs or table support at this end of the machine. The shaft 33 is rotated to effect engagement of the clutch member as by means of a cord 34 or similar flexible connection extending from a treadle 35 pivotally supported on a rod 36 secured to and extending between the legs or supporting frames at opposite ends of the machine. The cord 34 passes over a sheave 37 and to one arm 38 of a lever secured to and projecting from the shaft 33, and as shown in Figures 5, 6 and 7 of the drawings.

The other arm of said lever has a spring 39 secured at one end thereto, the opposite end of said spring being secured to one of the legs 11, said spring holding the members of the clutch mechanism disengaged, and the treadle 35 being employed to engage the clutch members for the purpose of starting operation of the sewing machine.

The presser foot of the sewing machine is automatically actuated by the mechanism just described for starting and stopping the machine, this presser foot actuating mechanism comprising a presser foot actuating lever 40 having one arm underlying the end of a presser foot actuating rod 41 connected with the presser foot in any suitable manner to cause said foot to be lowered in the operation of the mechanism to start the machine and to be raised in the operation of stopping machine. In the arrangement herein shown the other arm of said lever is connected by a rod 42 with the machine starting arm 38 hereinbefore mentioned so that when said arm 38 is actuated to start the machine the presser foot will be automatically lowered and vice versa.

The mechanism for cutting and severing measured lengths of material, as hereinbefore referred to, comprises a frame adjustably mounted to produce mops of different lengths, said frame movably supporting a cutter for operation thereof. Said frame comprises an end 43 located at the back of the machine, a top 44, sides 45, and tie bars 46. The end 43 has a shoulder 47 extending across it from edge to edge, said shoulder being seated upon a bar comprising a guide 48 secured to lugs projecting from a depending flange at the back of the table 10, and as shown in Figures 3 and 4 of the drawings. A gib 49 is secured to the front side of the bracket or end 43 and projects downwardly below the shoulder 47. This gib has a screw threaded stud engaged by the screw threaded hub of a clamp wheel 50 by means of which the gib is clamped against the guide 48 to hold the cutter frame in any position to

which it may have been moved. A support 51 in the form of a lip projecting downwardly from the front of the top 44 rests upon a ledge 52 projecting from the back surface of a flange 53 extending downwardly from the top 10 at the front of the machine. The tie bars 46 project through lugs 54 extending from the lower edges of the sides 45 and also through lugs 55 projecting from the opposite edges of the frame end 43, nuts upon the ends of the bars serving as a means for rigidly securing the frame parts together. The frame end 43 is supported by the shaft 12 that extends through holes suitably formed in branches 56 at the lower edge of the frame end, these branches loosely receiving the shaft thereby enabling the cutter frame to be adjustably positioned for the purpose of cutting mops of different lengths.

A cutter support 57 in the form of a bar frame is loosely supported on the shaft 12 for adjustable sliding movement thereon, the bearings for said support comprising ears 58 through which the shaft extends. A cutter driving pulley 59 is splined to the shaft 12 between the ears 58 and a belt 60 extends from said pulley to a pulley 61 secured to the shaft of a cutter 62 rotatably mounted in bearings 63 in branches extending from the front end of the support 57. The support 57 normally rests so that the upper edge of the cutter 62 is below the table 44, this position of rest being determined by a cutter positioning screw 64 rotatably secured at its upper end in a lug projecting from the under side of the top 44, and as shown in Figure 4 of the drawings. This screw rotatably engages a supporting loop 65 having an opening into which a lug at the front end of one of the sides of the support 51 extends, this lug being forked to extend on opposite sides of the screw 64, and as shown in Figures 3 and 4 of the drawings.

In order to minimize the amount of power required to swing the support 57 on its pivot at the rear end thereof a counterbalance weight 66 is suspended from one end of a cord 67, the opposite end of said cord being secured to the support 57 after passing over sheaves mounted in lugs projecting from the under side of the top 44, and as shown in Figure 4 of the drawings.

When the cutter 62 is raised to cut a mass of mop material in a manner to be herein-after described, it is projected through a slot 68 in the top 44 and in order to avoid accident to a person when the cutter is thus projected, a guard is automatically lowered over the slot 68 to enclose the edge of the cutter projecting through said slot. This guard comprises a hood 69 supported to rock to a slight extent between the side parts of a hood supporting frame 70 pivotally mounted at its rear end on a lug 71 extending from

the upper edge of the bracket or frame end 43 preferably at one side thereof.

A hood actuating rod 72 is pivotally connected at its upper end to a cross piece extending between the side parts of the supporting frame 70, the lower end of said rod being secured to an ear on the side of a cylinder 73. This cylinder contains a piston of any ordinary form having a piston rod 74 pivotally attached to one of the side parts of the support 57. A flexible hose or tube 75 extends from the lower end of the cylinder 73 into the base of a cylinder 76 supported, as on a floor, this cylinder 76 having a piston of any ordinary construction therein from which a piston rod 77 extends, the upper end of said rod being pivotally attached to one end of a piston-actuating arm 78 and the opposite end of said arm being pivotally connected with a cutter operating pedal 79 pivotally mounted on the rod 36, preferably close to the treadle 35. A spring 82 attached at its opposite ends to the cylinder 73 and to one of the sides 45 holds said cylinder and frame 70 in their raised positions.

When the pedal 79 is pressed down, as by the foot of the operator of the machine, inward movement of the piston in the cylinder 76 will, through the tube 75, create pressure in the bottom of the cylinder 73 which pressure will act in opposite directions against the bottom of the cylinder 73 and piston therein. The strength of the spring 82 is such that resistance to downward movement of the cylinder 73 is less than the resistance to upward movement of the support 57, wherefore the pressure in the cylinder 73 will cause the latter and the frame 70 to be moved downwardly to cause the hood 69 to cover the cutter 62. When the hood comes in contact with the upper surface of the top 44 its further downward movement and that of the cylinder 73 is prevented whereby the pressure in the cylinder will now act to force the piston outwardly thereby moving the support 57 and the cutter thereon upwardly, the latter through the slot 68, thereby severing the mass of threads projected across said slot. Upon release of the pedal 79 a reverse action of the parts will take place, thus restoring the cutter and hood to their normal positions, the cutter being moved downwardly from within the slot before the hood moves upwardly to uncover the slot.

The tape 24 is now wrapped about the length 22 of material and the whole is slidable under the needle of the sewing machine and may be manipulated to sew the parts together in such manner as may be desired.

It will be noted that an opening 80 is made in the table 10 and that the top 44 of the cutter frame projects through this opening substantially closing it except as to one side thereof. As to this side a plate 81 is secured to the top 44 and projects underneath the

top 10 at certain edges of the opening 80, and as shown in Figure 1 of the drawings. This plate 81 therefore acts to keep that part of the opening 80 not occupied by the top 44 closed in any position to which the cutter frame may have been moved for purposes of adjustment.

It will be noted that all of the mechanism for supporting the cutter, for operating it, and for shielding it is mounted on the frame comprising the end 43, top 44, tie bars 46, cutter support 57, etc. so that when it is desired to adjust the position of the cutter as hereinbefore described all of the parts are simultaneously moved.

Some mechanism embodying grinders for the cutter and other parts is shown herein, but as such form no part of the present invention a detailed description thereof has been omitted herein.

I claim:—

1. In a mop making machine comprising a table, a ring located on said table to collect several threads in a mass for delivery to said table, a holder frictionally engaging said mass to prevent backward movement thereof, and means for transversely severing the end portion of said mass to provide a length of mop material.

2. In a mop making machine comprising a table, said table having a slot through which a cutter may project a groove to receive a tape, a ring at one end of the table to collect into a mass a number of threads passed through said ring, a spring clamp underneath which said threads are passed to overlie said slot, a gauge for measuring lengths of said mass, and cutter means passing through said slot for transversely severing the end portion of said mass to provide a length of mop material.

3. In a mop making machine comprising a table, means for collection of a mass of threads on said table, a cutter movably mounted underneath the table for projection through an opening therein, a hood movably mounted to cover said cutter, means for moving said cutter to cut said threads, and a connection between said hood and said cutter moving means to effect operation of the former by the latter.

4. A mop making machine including a table having an opening therein, a frame supported thereby and projecting into said opening, said frame having a slot, means for supporting a cutter and driving pulley for combined movement with said frame, a cutter covering hood supported on said frame, means for adjustably changing the lateral position of said frame with the members supported thereby, and means for collection of a mass of threads to overlie said slot.

5. A mop making machine including a table having an opening therein, a frame supported thereby and projecting into said

opening with its top flush with the top of said
table, said top having a slot, a plate secured
to the top of said frame and underlying the
edge of the opening in the table, means for
5 supporting a cutter and driving pulley for
combined movement with said frame, a cut-
ter covering hood supported on said frame,
means for adjustably changing the lateral
position of said frame with the members sup-
10 ported thereby, and means for collection of
a mass of threads to overlie said slot.

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