E. CARVER.

INSULATOR PIN OR BRACKET MACHINE.

APPLICATION FILED JUNE 20, 1910.

997,269.

Patented July 11, 1911

3 SHEETS—SHEET 1.

Fig. 1.

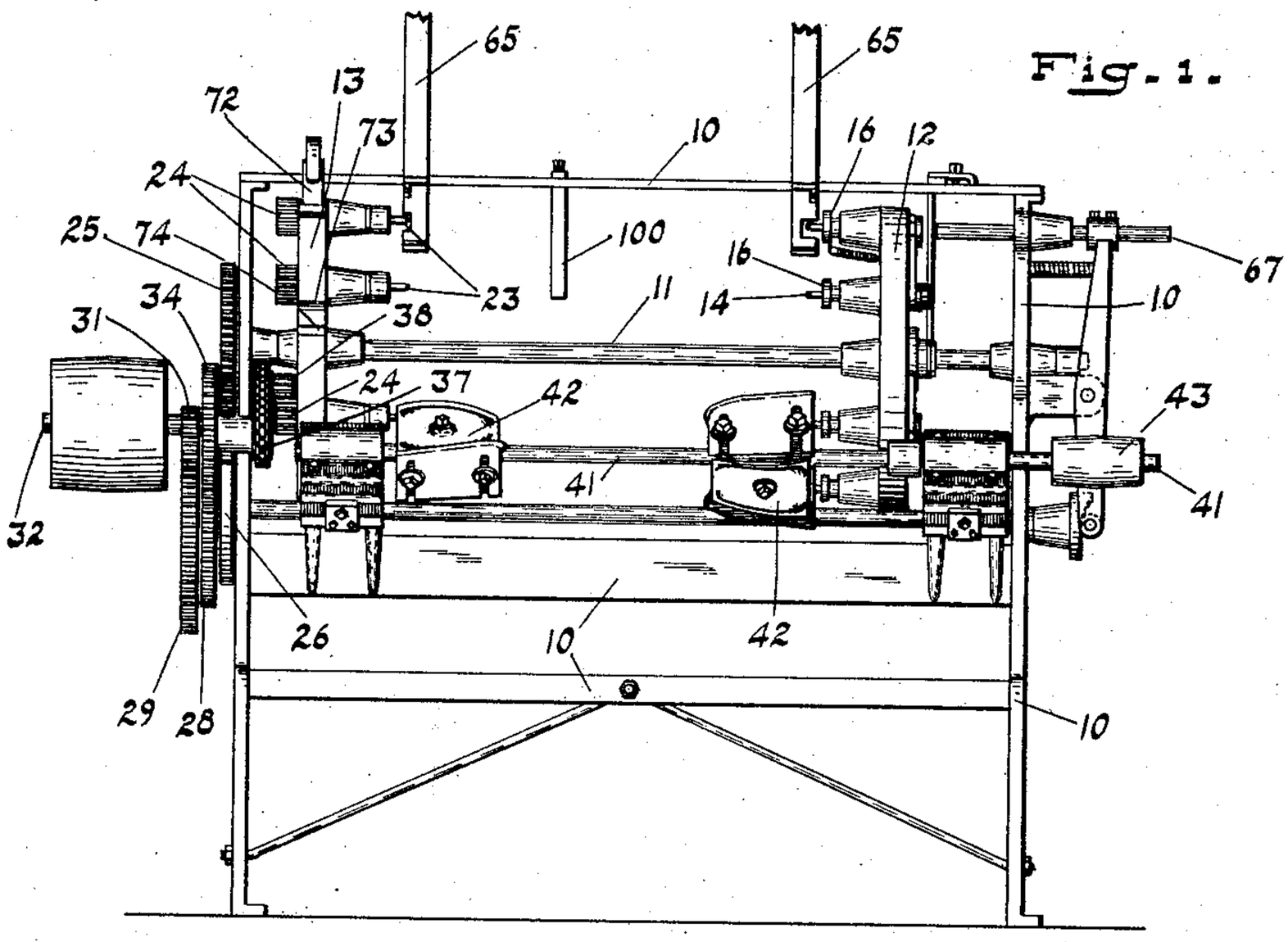
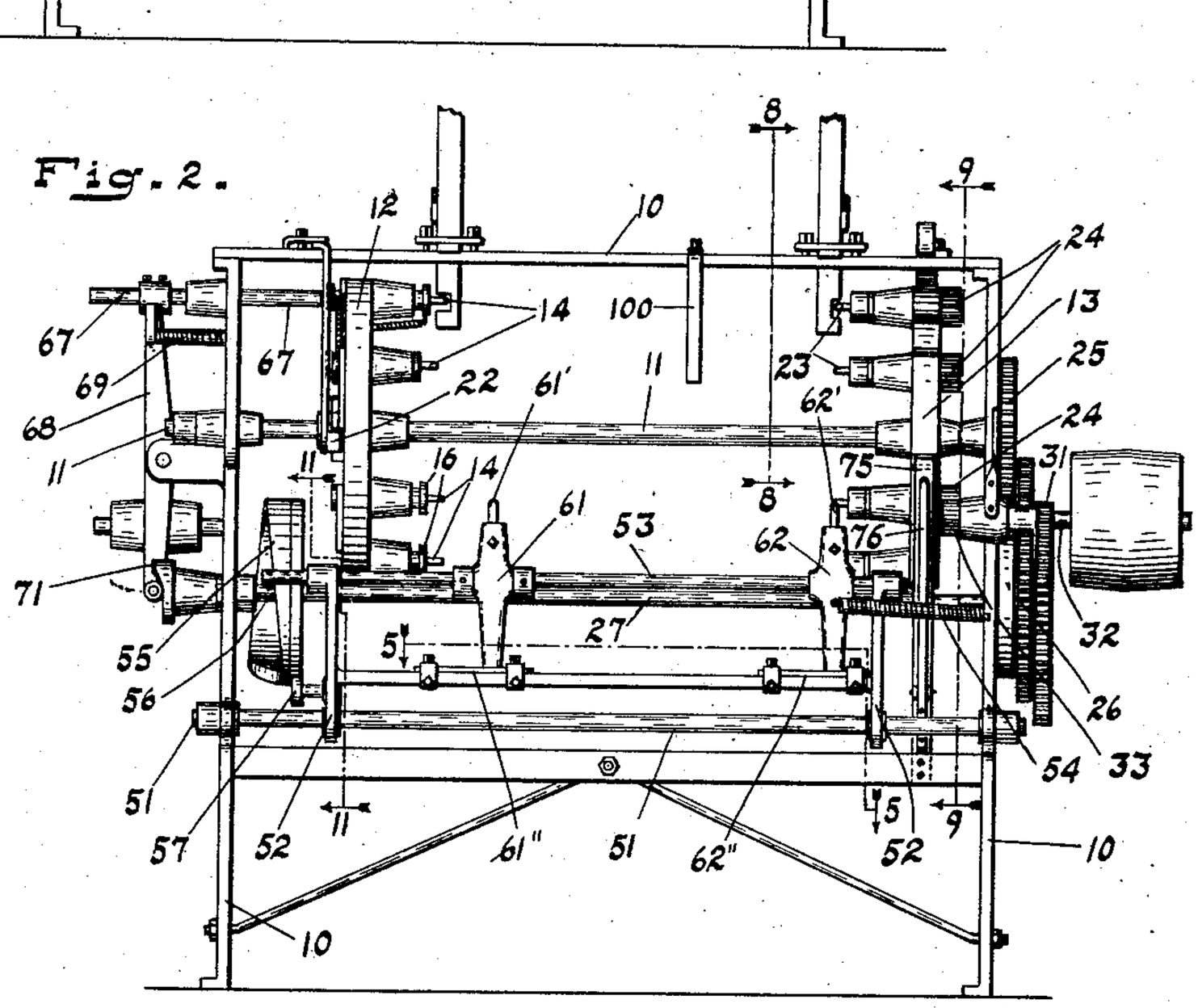


Fig. 2.



Witnesses

Walter Troemel.

Thomas W. McMeans

Inventor

Edwin Carver.

By Bradford & Hood

Attorneys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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3 SHEETS—SHEET 2.

Fig. 3.

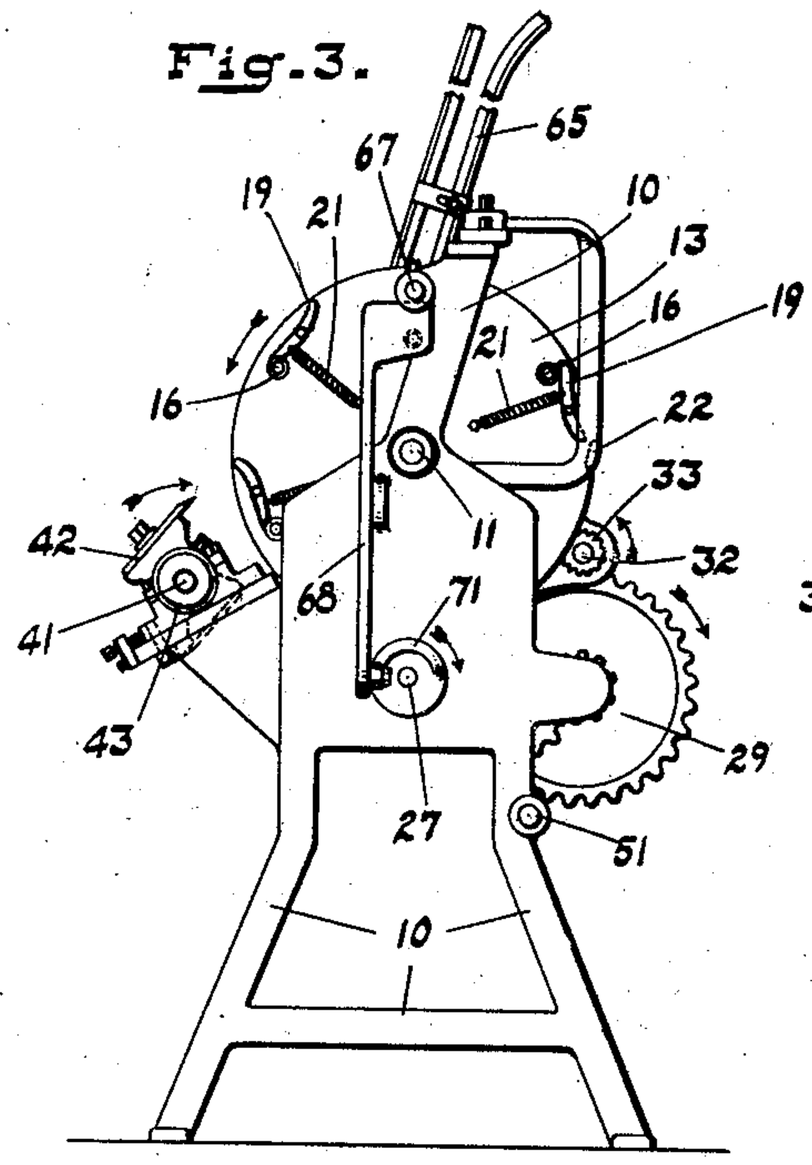


Fig. 4.

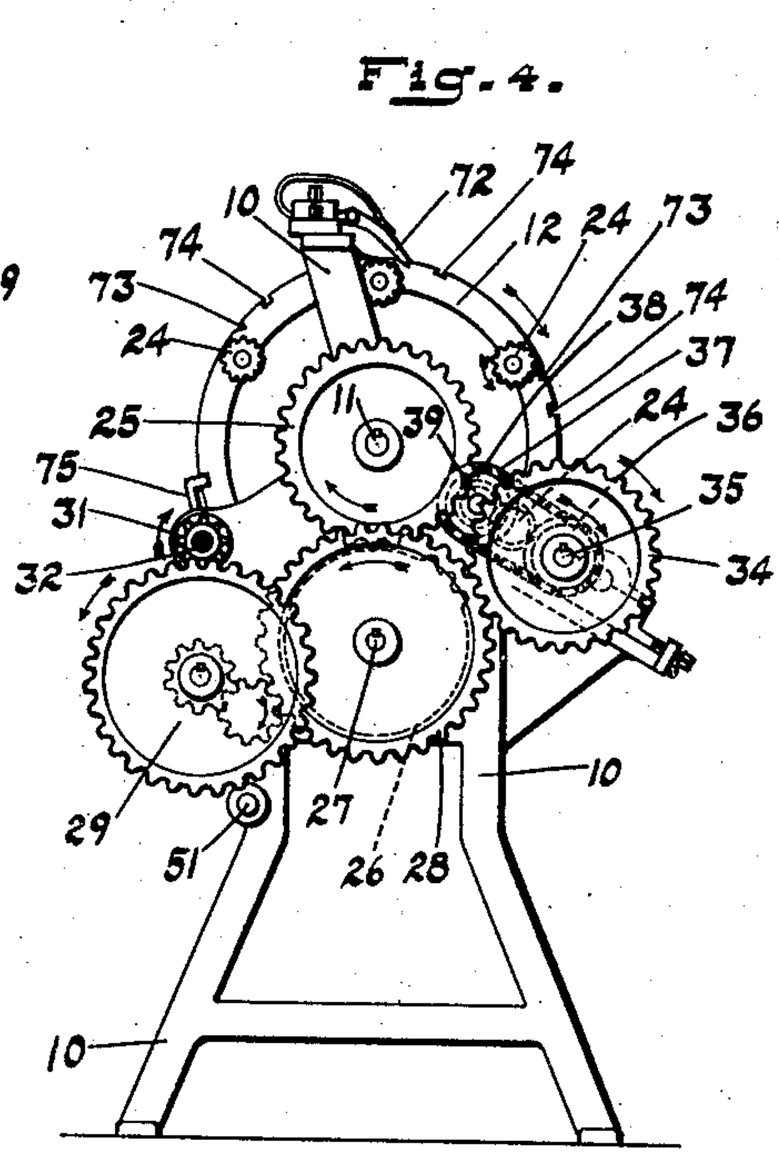


Fig. 8.

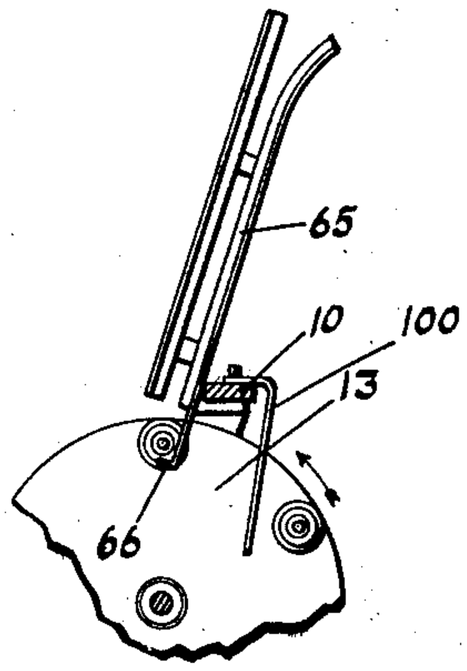


Fig. 5.

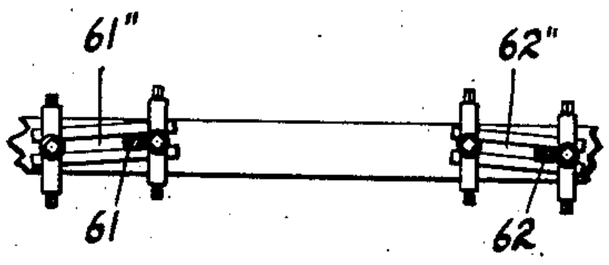


Fig. 6.

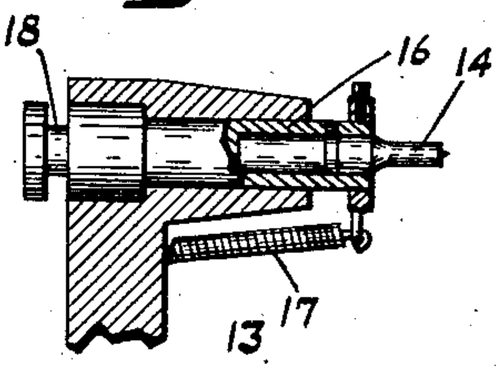


Fig. 11.

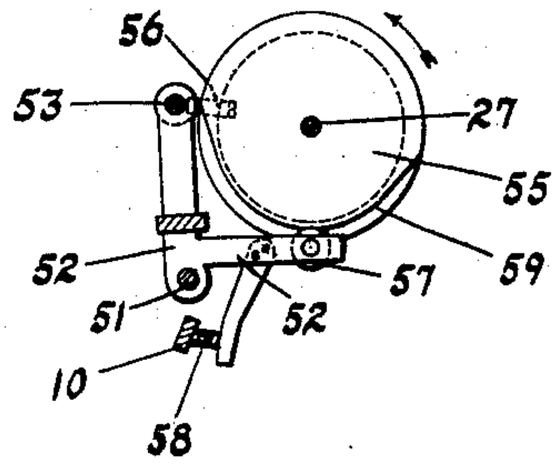
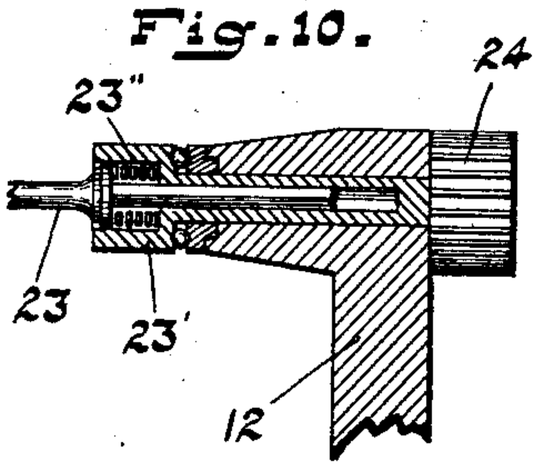


Fig. 10.



Witnesses
Walter Troemel.
Thomas W. McMeans

Inventor
Edwin Carver.

By Bradford Stood
Attorneys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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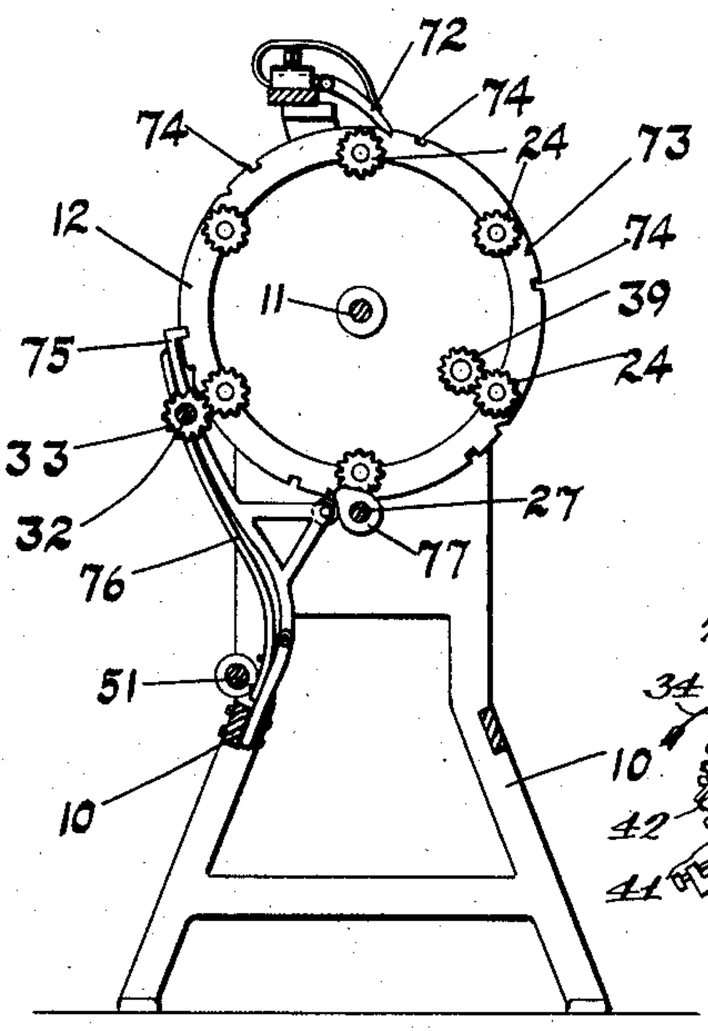
3 SHEETS—SHEET 3.

Fig. 9.



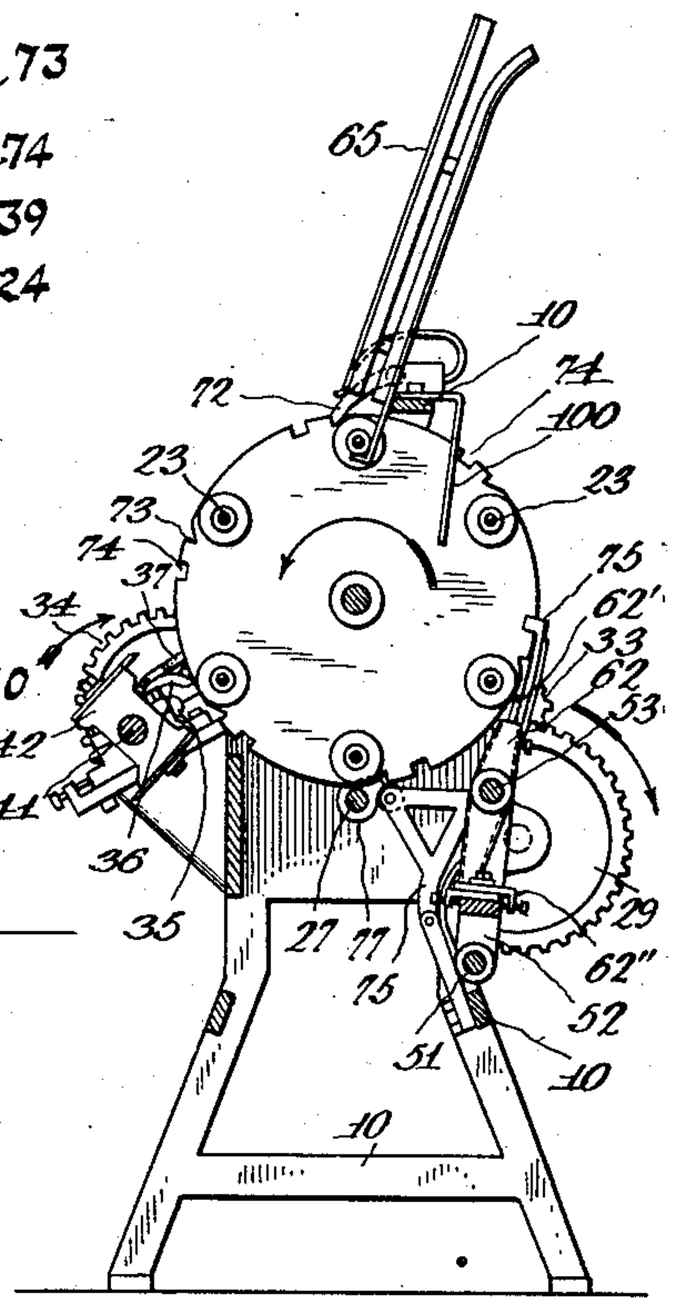


Fig. 7.

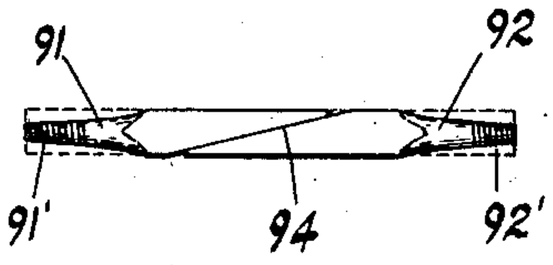


Fig. 12.

Witnesses
Walter Troemel.
Thomas W. McMeans

Inventor
Edwin Carver.
By Bradford & Hood
Attorneys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWIN CARVER, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO JAMES E. OWEN AND HOMER L. McNAUGHTON, BOTH OF NORTH VERNON, INDIANA.

INSULATOR PIN OR BRACKET MACHINE.

997,269. Specification of Letters Patent. **Patented July 11, 1911.**

Application filed June 20, 1910. Serial No. 568,050.

To all whom it may concern:

Be it known that I, EDWIN CARVER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Insulator Pin or Bracket Machine, of which the following is a specification.

In the manufacture of insulator pins or brackets heretofore the pins or brackets have been manufactured separately and there has consequently been a considerable waste of material.

The object of my present invention is to produce a machine capable of automatically producing simultaneously two pins or brackets with the turned insulator-receiving portions at opposite ends of the stock, the apparatus being such as to automatically withdraw the stick or stock from a feed chute; to present the same to shaping cutters; to produce the proper threads upon the insulator-receiving portions; and to release the finished work.

The accompanying drawings illustrate my invention.

Figure 1 is an elevation of the cutter side of the machine; Fig. 2 an elevation of the feed side; Fig. 3 an elevation of the left hand end of the machine; Fig. 4 an elevation of the right hand end of the machine; Fig. 5 a fragmentary detail of the cams for driving the thread cutting tools; Fig. 6 a sectional detail of one of the centering spindles; Fig. 7 a plan of the finished product of the machine; Fig. 8 a section on line 8—8 of Fig. 2; Fig. 9 a section on line 9—9 of Fig. 2; Fig. 10 a section of one of the driving spindles; Fig. 11 a section on line 1—1 of Fig. 2, and Fig. 12 a medial vertical section through Fig. 2 looking to the left.

In the drawings, 10 indicates the main frame of the machine in which is journaled a turning-head shaft 11 provided at its opposite ends with two turning heads 12 and 13. Head 12 carries a plurality of centering spindles 14 (six in the present case) each of which is rotatably mounted in a carrier 16 which is normally outwardly urged by a spring 17. Each carrier 16 is provided at its outer end with a groove 18 adapted to receive a pivoted catch 19 urged in one direction by a spring 21. Arranged in the path of movement of the tails of catches 19 is a stationary cam or finger 22 which serves, at a proper time, to release each catch 19 and permit the withdrawal of the finished product from the machine.

The head 13 carries a plurality of rotatable driving spindles 23 arranged in alinement with the centering spindles 14 and each provided with a driving pinion 24. Secured to one end of shaft 11 is a driving gear 25 adapted to be intermittently engaged by a three-toothed mutilated gear 26 carried by the shaft 27. Secured to the time shaft 27 is a gear 28 which meshes with an intermediate gear which in turn meshes with one member of a compound gear 29, the other member of said gear meshing with a pinion 31 carried by the main drive shaft 32. Shaft 32 carries a pinion 33 with which the several pinions 24 are adapted to be brought into mesh by step-by-step forward movement of shaft 11.

Meshing with gear 28 is a gear 34 carried by a shaft 35 which carries a sprocket wheel 36. Running over this sprocket wheel 36 is a sprocket chain 37 which passes over a sprocket wheel 38 which, in turn, carries a pinion 39 with which the several gears 24 are brought successively into mesh.

Journaled in suitable bearings parallel with shaft 11 is a cutter shaft 41 carrying a pair of cutter heads 42 which lie closely adjacent the two turning heads 12 and 13 in position to operate upon the stock which lies between that pair of centers 14 and 23 which is in driving connection with the pinion 39. The shaft 41 is continuously driven through the medium of a pulley 43.

Pivoted upon a bar 51 are two brackets 52 in which is slidably and rotatably mounted a shaft 53 which is normally drawn axially in one direction by means of a spring 54. Mounted upon the time shaft is a cam 55 which engages a roller 56 carried by shaft 53 and thereby serves to shift the said shaft 53 axially. One of the brackets 52 carries a roller 57 which engages the circumferential surface of the cam 55 and is normally held in engagement therewith by a spring 58. The circumferential surface of the cam 55 is concentric with the axis of the time shaft for the major portion of its extent but at one point is provided with a notch 59 into which the roller 57 may drop so as to thus cause a lateral withdrawal of the shaft 53 for a limited time. Pivoted upon shaft 53 are two cutter carriers 61 and 62 which carry threading tools 61′

and 62′ respectively. The brackets 61 and 62 are projected into stationary oppositely inclined cam slots 61″ and 62″ respectively, so that, as shaft 53 is reciprocated axially, the threading tools 61′ and 62′ will be reciprocated toward and from the axis of the article operated on.

Leading downwardly toward the turning heads are two blank chutes 65 each of which is provided at its lower end with an upturned foot 66 which lies beyond the lower end of the upper side of the chute in such position as to retain a blank or bracket-forming stick in alinement with one pair of spindles. Alined with the spindles when they are in alinement with the lower-most blank in the chutes 65, is a plunger 67 which is adapted to be driven into engagement successively with each centering spindle to drive the same into engagement with the lower-most blank in the chute 65 and clamp such blank between the centering spindle and the alined driving spindle, the centering spindle being driven inwardly far enough to permit the adjacent latch 19 to drop into the notch 18 of the centering spindle. The plunger 67 is controlled by means of a lever 68 which is acted upon in retracting direction by a spring 69 and in acting direction by a cam 71 carried by the time shaft 27.

In order to prevent reverse rotation of the turning heads, I provide a spring-pressed retaining pawl 72 which is adapted to enter in one of the suitably-formed notches 73 in the head 13. Head 13 is also provided with a plurality of notches 74 adapted to receive a holding pawl 75 which is normally urged toward the head by a spring 76. A cam 77 carried by the time shaft is arranged to automatically retract the pawl 75 immediately prior to the engagement of the mutilated gear 26 with gear 25.

Each driving spindle 23 comprises an active tip 23′ which is splined to the main body of the spindle and backed up by a strong spring 23″, so as to allow for considerable variations in lengths of the blanks.

The operation is as follows: Blanks, of the form shown in dotted lines in Fig. 7, are fed into the chutes 65. As the time shaft rotates cam 71 comes into engagement with lever 68 so as to drive plunger 67 into engagement with the alined centering spindle carrier 16 and drive the centering spindle inwardly so as to engage the lower-most blank between the centering spindle and its driving spindle, the appropriate latch 19 dropping into notch 18 and holding the parts in that position, and the plunger 67 being immediately withdrawn. Immediately cam 67 comes into engagement with pawl 75 and withdraws it from head 11 and immediately thereafter mutilated gear 26 comes into engagement with gear 25 and advances the turning-head shaft 11 one-sixth of a revolution. This operation is repeated and on the second step the first blank is brought into position where the pinion 24 with its driving spindle comes into mesh with pinion 39. This advancement of the turning-head shaft brings the first blank into position to be engaged by the cutters 42 and the blank is rotated by pinion 39 one complete revolution, or a trifle more, so that the cutters 42 serve to produce the cylindrical insulator-receiving portions 91 and 92 on the blank. Two more successive steps of the turning head cause introduction of two more blanks and bring the pinion 24 on the driving spindle of the first blank into mesh with the constantly running pinion 33, which pinion rotates at such speed as to cause the blank to be rotated the desired number of times necessary in the production of the threads 91′ and 92′. Thereupon cam 55 engages roller 56 so as to shift shaft 53 endwise and, by reason of the action of the cam slots 61″ and 62″, this serves to bring the threading tools 61′ and 62′ into action against the previously formed cylindrical portions 91 and 92 of the blank, the threading tool 62′ starting in at the tip of its thread and the threading tool 61′ starting in at the base of its thread.

As soon as shaft 53 has completed its axial movement in threading production, roller 57 drops into notch 58 and the shaft 53 is thus shifted bodily laterally away from the axis of the blank. At this time the mutilated gear 26 comes again into engagement with gear 25 and causes another advancement of the turning head shaft so as to drive the finished product against the ejector spring 100 and so as to bring the tail of the catch 19 which is retaining the centering spindle of the first blank, into engagement with the finger 22 and thus permits spring 15 to retract the centering spindle from the finished product and permit the ejector spring to act.

It will be seen from the above that the operation of producing a product of the machine is entirely automatic and that to obtain finished brackets or pins it is merely necessary to cut the finished product into two pieces by a suitable cut. If angle brackets are desired, the cut will naturally extend diagonally as indicated by the line 94 in Fig. 7, thus producing two complete angle brackets without waste of any material.

Head 13 is axially adjustable in shaft 11; one chute 65 is movable toward and from its companion; plunger 67 is adjustable in relation to lever 68; and tool carrier 61 is adjustable toward and from its companion 62, so that the machine may handle blanks of different sizes.

I claim as my invention:

1. In an insulator pin and bracket ma-

chine, the combination of a pair of turning heads, a plurality of centering spindles carried by one of said heads, a corresponding plurality of driving spindles carried by the other of said heads, and each provided with a driving pinion, means for intermittently advancing said turning heads step by step and for retaining said turning heads in successive advanced positions, a cutter shaft and cutters carried thereby, a gear arranged in position to be meshed by the driving spindle pinions successively when said driving spindles are advanced adjacent the cutter shaft, means for driving said gear, an axial movable threading tool shaft, movable brackets sustaining said shaft, a cam, intermediate connections between said cam and brackets for laterally shifting the threading tool shaft, a second cam, intermediate connections between said second cam and threading tool shaft for shifting the same axially, a pair of threading tools pivoted upon the threading tool shaft, cams engaging said threading tools to shift them laterally during axial movement of the threading tool shaft, a gear arranged to be meshed by the driving spindle pinions when adjacent the threading tools, means for driving said gear, a blank chute delivering to the turning heads, means for driving one spindle of each pair axially to clamp a blank within the chute between the pair of spindles, means for retaining said spindle in blank clamping position, and means for withdrawing said retaining means.

2. In an insulator pin and bracket machine, the combination of a pair of turning heads, a plurality of centering spindles carried by one of said heads, a corresponding plurality of driving spindles carried by the other of said heads, and each provided with a driving pinion, means for intermittently advancing said turning heads step by step and for retaining said turning heads in successive advanced positions, a cutter shaft and cutters carried thereby, a gear arranged in position to be meshed by the driving spindle pinions successively when said driving spindles are advanced adjacent the cutter shaft, means for driving said gear, an axial movable threading tool shaft, movable brackets sustaining said shaft, a cam, intermediate connections between said cam and brackets for laterally shifting the threading tool shaft, a second cam, intermediate connections between said second cam and threading tool shaft for shifting the same axially, a pair of threading tools pivoted upon the threading tool shaft, cams engaging said threading tools to shift them laterally during axial movement of the threading tool shaft, a gear arranged to be meshed by the driving spindle pinions when adjacent the threading tools, and means for driving said gear.

In witness whereof, I, have hereunto set my hand and seal at Indianapolis, Indiana, this 14th day of June, A. D. one thousand nine hundred and ten.

EDWIN CARVER. [L. S.]

Witnesses:
ARTHUR M. HOOD,
FRANK A. FAHLE.