

A. J. BRIGGS.  
TYPE WRITING MACHINE.  
APPLICATION FILED DEC. 1, 1909.

Patented Jan. 25, 1910.  
2 SHEETS—SHEET 1.

947,276.

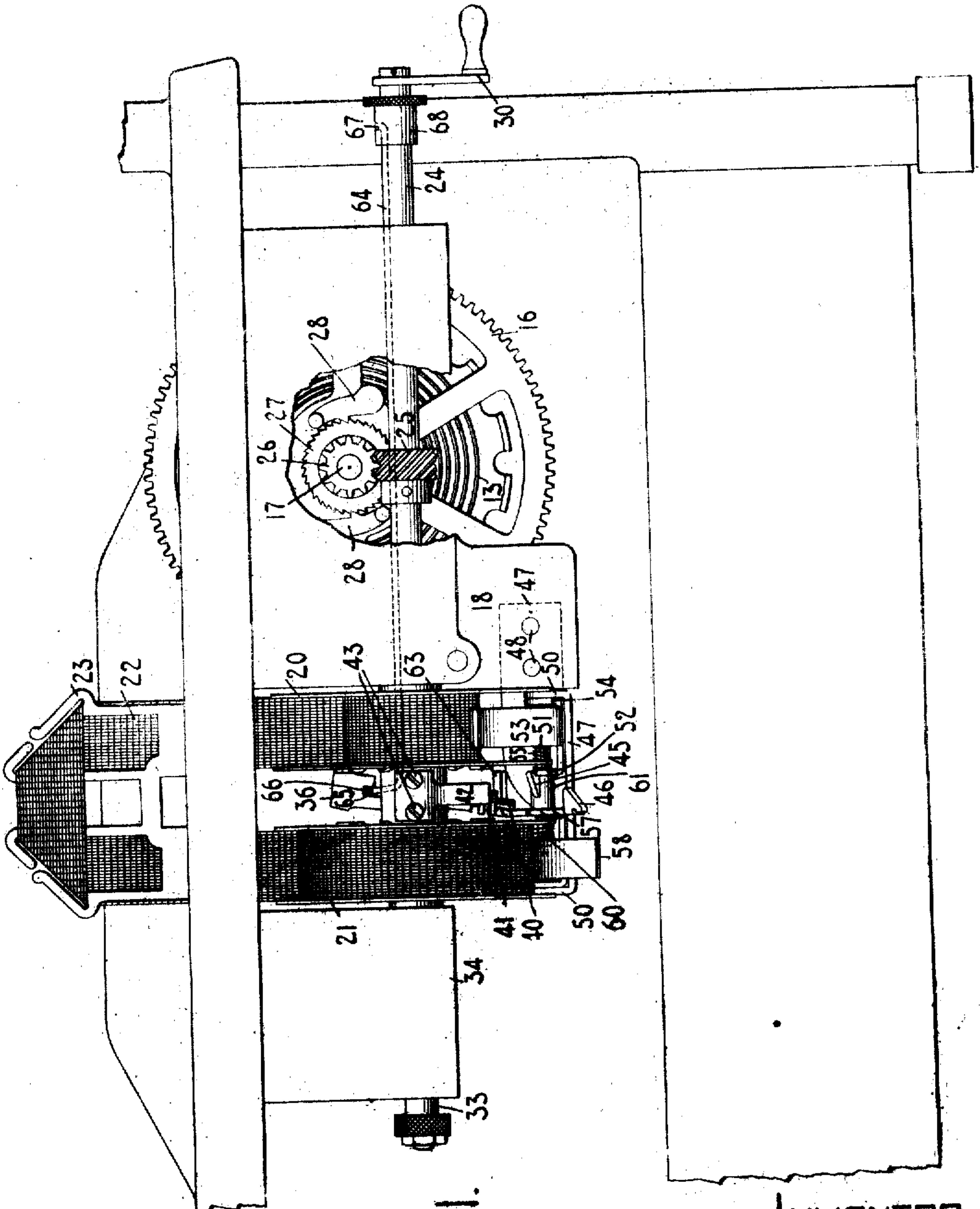


FIG. 1.

WITNESSES.

*E. M. Wells*

*R. H. Strother*

INVENTOR

*Arthur J. Briggs*

*By James F. Fisher*

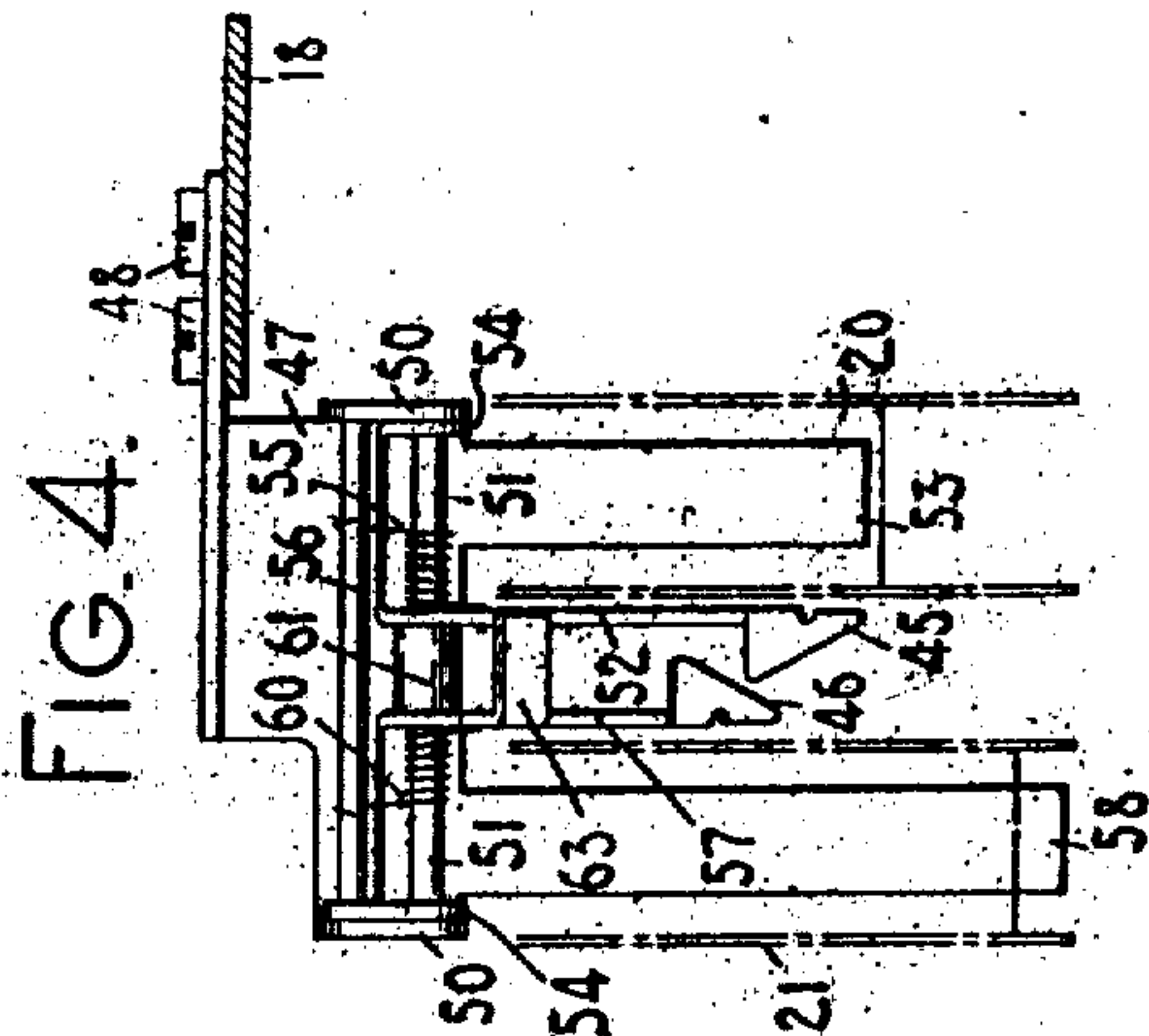
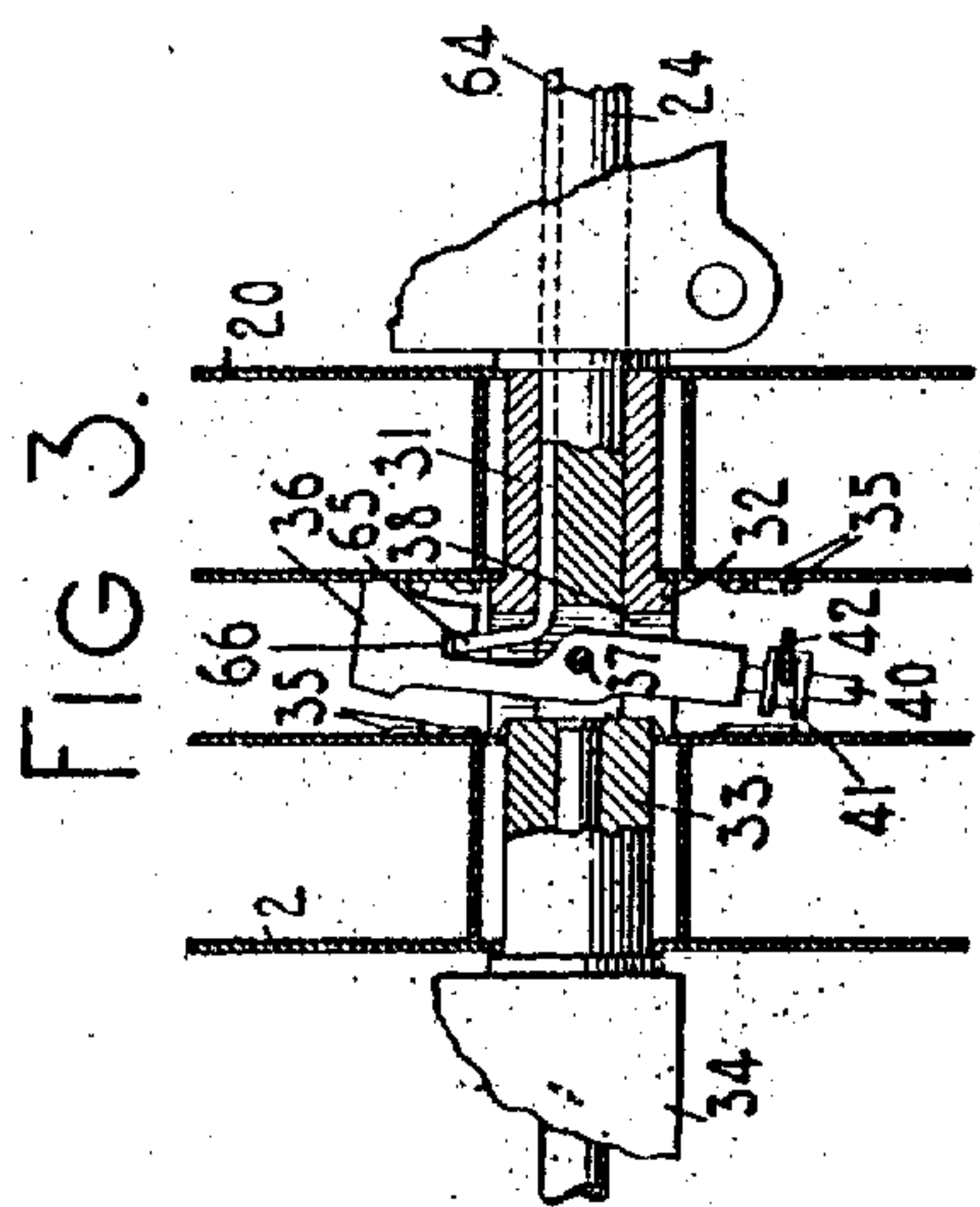
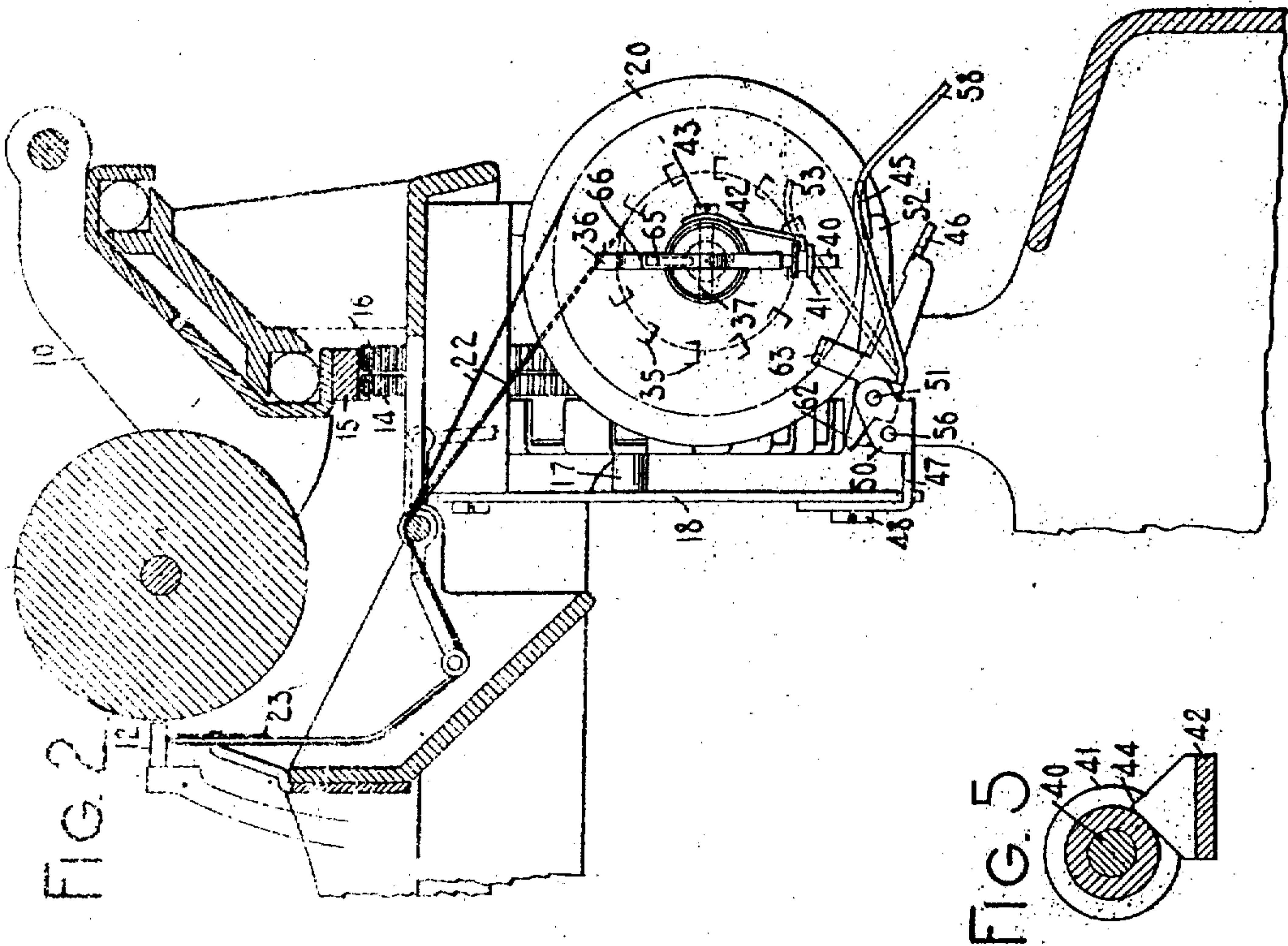
HIS ATTORNEY

A. J. BRIGGS.  
TYPE WRITING MACHINE.  
APPLICATION FILED DEC. 1, 1909.

947,276.

Patented Jan. 25, 1910.

3 SHEETS—SHEET 2.



WITNESSES:

*E. M. Wells*  
*R. H. Strother*

INVENTOR.

*Arthur J. Briggs*  
*By James F. Ellis*

THE ATTORNEY



# UNITED STATES PATENT OFFICE.

ARTHUR J. BRIGGS, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE SMITH PREMIER TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

947,276.

Specification of Letters Patent. Patented Jan. 25, 1910.

Application filed December 1, 1908. Serial No. 530,722.

To all whom it may concern:

Be it known that I, ARTHUR J. BRIGGS, citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to the ribbon feed mechanism of such machines.

My invention has for its principal object to improve in certain respects the ribbon feed and reversing mechanism shown in the application of Alexander T. Brown, filed March 12, 1906, Serial No. 305,561.

My invention consists in certain features of construction and combinations and arrangements of parts, all of which will be fully set forth herein and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a rear elevation of a portion of a typewriting machine having my invention embodied therein, parts being broken away and parts omitted. Fig. 2 is a fore and aft vertical sectional view of the same. Fig. 3 is a rear view partly in vertical section through the center of the ribbon spools. Fig. 4 is a top plan view of certain cams and followers constituting parts of the automatic reversing mechanism. Fig. 5 is a fragmentary view in section and on an enlarged scale and showing the end of a certain detent spring and the roller with which it coöperates.

I have shown my invention embodied in a typewriter of the style known commercially as the Smith Premier No. 10 or the Smith Premier visible typewriter. This machine has a carriage 10 which supports a platen 11 against the front face of which types 12 are adapted to strike. This carriage is propelled by a spring 13 one end of which is connected with a gear 14 that meshes with a feed rack 15 on the carriage. Another gear 16 mounted at the side of the driving gear 14, is geared to an escapement device, not shown. The gears 14 and 16 are mounted on a shaft 17 which is supported in a frame 18 secured to the top plate of the machine.

The ribbon spools 20 and 21 are mounted side by side at the back of the typewriter and the ribbon 22 is led upward and forward from said spools and is threaded

through a vibratory ribbon guide 23 which normally stands below the printing point, as shown in Fig. 2, and which is adapted to be moved upward to cover the printing point at each operation of a type. The ribbon spools are driven to feed the ribbon by means of a shaft 24 lying transversely of the machine and journaled in the frame 18. Just below the shaft 17 said shaft 24 has fixed thereon a spiral gear 25 which meshes with a spiral gear 26 loosely mounted on the shaft 17 and having rigid therewith a ratchet wheel 27. Said ratchet wheel is engaged by pawls 28 mounted on the gear wheel 16. The construction is such that the shaft 24 will be turned toward the rear of the machine whenever the carriage is moving toward the left but will not be turned when the carriage is moving toward the right. The shaft 24 has a hand crank 30 mounted thereon by means of which said shaft can be turned at any time independently of the carriage, the ratchet wheel 27 turning idly under its pawls 28.

The spool 20 is mounted on a collar 31 which is rigidly mounted on the right-hand end of the shaft 24 where said shaft projects beyond the frame 18, said collar, in effect, constituting a part of the shaft. The collar 31 is formed at its ends with an enlargement 32 which prevents the spool from slipping off the end of the collar. This spool is loosely mounted on the collar so that said spool and collar can turn independently of each other.

The spool 21 is detachably mounted in the machine by means of a spring-pressed puppet 33 which is slidably mounted in a bracket 34 depending from the top plate. The left-hand end of the puppet 33 abuts the right-hand end of the collar 31 and shaft 24 and enters a shallow depression in the end of said collar. The spool 21 is loosely mounted on the puppet and it can be removed by drawing the puppet out endwise against the tension of a spring (not shown). This detachable ribbon spool is the invention of Edward A. Goodhue, and is described and claimed in the application of said Goodhue, filed August 27th, 1908, Serial No. 450,487.

Each of the spools 20 and 21 is formed with a series of ratchet teeth 35 struck out from the flanges thereof, the teeth being on the adjacent flanges of the two spools; that



is to say, on the right-hand flange of the spool 20 and on the left-hand flange of the spool 21 as viewed from the front of the machine. The teeth 35 are adapted to be engaged by a dog 36 which is in the nature of a lever of the first order pivoted on a pin 37 passing through the collar 31 and the shaft 24. Said dog lies in a slot 38 cut diametrically of the shaft and collar and cut in endwise of said shaft and collar from the right-hand end thereof. The dog 38 is shown in Figs. 1 and 3 engaging the spool 20 but by rocking it about its pivot 37 it can be made to release said spool 20 and to engage the spool 21 and it is by rocking this dog from one of the positions to the other that the direction of feed is reversed. The dog 36 projects beyond the sleeve 31 on both sides thereof as shown in the drawings. The end of said dog opposite the spool-engaging end thereof, terminates in a tripping device having the form of a pin 40 having a grooved roller 41 mounted thereon. This roller is engaged by a plate spring 42 which is secured to one side of the sleeve 31 by means of a pair of screws 43. The free end of the spring 42 is bent toward the roller 41 and is pointed as shown in Fig. 5 at 44. This pointed end of the spring lies in a peripheral groove in the roller 41 and prevents said roller from falling off of the pin 40. The point 44 is midway of the two shifted positions of the roller 41. This pointed spring is adapted to hold said roller and the dog 36 in either of its shifted positions and to press said dog with a slight spring pressure against whichever one of the ribbon spools is being driven. The pin 40 is prolonged beyond the roller 41 and the end of said pin is adapted to cooperate with two cams 45 and 46, forming parts of the automatic reversing mechanism. These cams are mounted on a bracket 47 which is secured to the lower forward part of the frame 18 by means of screws 48. Said bracket has two upturned ears 50 which carry a pivot rod 51 that lies a little below the forward parts of the spools 20 and 21. The cam 45 is formed on an arm 52 that projects toward the rear of the machine from the rod 51 on which said arm is pivoted. The arm 52 is bent up from another arm 53 which constitutes a follower adapted to be pressed against the ribbon that is wound on the spool 20. One end of the arm 53 has another ear 54 bent up therefrom and pivoted on the rod 51. This frame, comprising the arms 52 and 53, is pressed upward by means of a spring 55 coiled about the rod 51 and at one end lying under the arm 52 and at the other end under a cross rod 56 of the bracket 47. The cam 46 is formed on the forward end of an arm 57 of a frame similar to the one just described and including an arm 58 which acts as a follower for the

ribbon on the spool 21. The frame 57, 58 is controlled by a spring 60 which acts in the same manner as the spring 55. The two frames are spaced apart on the rod 51 by means of a collar 61.

In Fig. 4 the general position of the spools 20 and 21 is indicated by broken lines and it will be seen that the follower arms 53, 58, come between the flanges of the respective spools and that the cams 45 and 46 lie between the spools themselves. Each of said cams consists of an ear bent off from the respective arms 52, 57 and made on an incline or bevel. When the ribbon is substantially exhausted from either of the spools the corresponding follower 53, 58 will have been moved up by its spring 55, 60 to such a position that the corresponding cam 45, 46 will have moved into the path of the pin 40. Said pin engaging said cam will be moved toward the right or toward the left as the case may be, throwing the spool-engaging end of the dog in the opposite direction. The cam 45 is adapted to push the pin 40 away from the spool 20 and this acts to force the engaging end of the dog into engagement with said spool 20 and a similar thing is true of the cam 46. It will be noted in Fig. 4 that one of these cams stands in advance of the other so that there is no interference between the two cams. In order to prevent the cams from moving too high when the spool 21 is removed from the machine, an arm 62 projects from one of the ears of the frame comprising the cam 46 and follower 58, and said arm is adapted to strike the rod 56 and thus limit the upward motion of said cam and follower. An arm or ear 63 is bent off from the arm 57 and lies above the arm 52 of the cam 45 and holds said cam down when the follower 58 is held down. These features, however, are not of my invention.

In order to reverse the direction of ribbon feed by hand the shaft 24 is formed with a longitudinal groove in which lies a wire 64 which extends nearly the entire length of the shaft. At its inner end this wire projects into the slot 38 where it is bent up as shown at 65 into a notch 66 formed in the dog 36. The outer end of the wire 64 is bent outward as shown at 67 where it enters a suitable hole in a collar 68 loosely mounted on the shaft 24 and having a milled head. The dog 36 can be shifted to either of its two positions by sliding this collar by hand to the right or to the left as the case may be.

In the application of Alexander T. Brown hereinbefore referred to, two ribbon spools are shown mounted side by side in somewhat the same manner as the two spools shown herein and they are engaged by a pivoted dog adapted to be shifted into engagement with either spool. This dog was, however, pivoted on the outside of the sleeve



which corresponded to the sleeve 31 in the present case, and said sleeve had to be squared or flattened for this purpose. The roller which corresponded to the roller 41 was on the wheel-engaging end of the dog so that when the ribbon was exhausted from one of the spools the cam controlled by that spool had to pull the follower toward the spool. In order to accomplish this the cams were made in a form that was much less convenient to manufacture than that shown in the present case and a form in which said cams were not as rigid as those shown in the present case. The present construction is simpler to manufacture, is more rigid and positive in its action and is in several respects an improvement over that shown in the Brown application.

Various changes can be made in the details of construction and arrangement without departing from my invention.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine and in ribbon mechanism, the combination of two ribbon spools arranged side by side, a driving shaft coaxial with said spools, a dog pivotally mounted on said driving shaft between said spools and shiftable about its pivot into engagement with either spool, said dog consisting of a lever of the first order having one of its ends formed to engage the ribbon spools and having a tripping device at the other end and two cams controlled by the ribbon on said spools and arranged to come into the path of said tripping device when the ribbon is substantially exhausted from one of the spools, each of said cams being arranged to push said tripping device away from the corresponding spool and thus to throw the spool-actuating end of the dog into engagement with said corresponding spool.

2. In a typewriting machine and in ribbon mechanism, the combination of a pair of ribbon spools arranged side by side, a driving shaft passing through one of said spools and having a longitudinal slot there-through, a dog pivoted between its ends in said slot and having one of its ends arranged to engage either spool, a tripping device on

the other end of said dog, two cams, one controlled by the ribbon on each spool and each arranged to be moved into the path of said tripping device when the ribbon is substantially exhausted from the corresponding spool and each of said cams arranged to push said tripping device away from the corresponding spool and thus to throw the spool engaging end of the dog into engagement with said corresponding spool.

3. In a typewriting machine and ribbon mechanism, the combination of two ribbon spools arranged side by side, a driving shaft coaxial with said ribbon spool and having a longitudinal slot therethrough, a dog pivotally mounted between its ends in said slot and having one of its ends formed for engagement with either of said spools, a tripping device on the other end of said dog, two cams each controlled by the ribbon on one of said spools and arranged to be moved into the path of said tripping device when the ribbon is substantially exhausted from the corresponding one of said spools and each of said cams arranged to push said tripping device away from the corresponding spool, and a retaining device secured to the outside of said shaft between said spools and engaging said dog to retain it in either of its shifted positions.

4. In a typewriting machine and in ribbon mechanism, the combination of two ribbon spools arranged side by side, a shaft extending through one of said spools and having a longitudinal slot therethrough between the spools, a dog pivotally mounted between its ends in said slot and having one end arranged to engage either ribbon spool, and hand-actuated means for shifting said dog from one spool to the other, said hand-actuated means including a wire extending longitudinally of said shaft and bent up at its end into said slot, and a notch in said dog engaged by the bent up end of said wire.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 26th day of November A. D. 1909.

ARTHUR J. BRIGGS.

Witnesses:

JOHN A. PROSS,  
GEO. C. ORTLOFF.