

(No Model.)

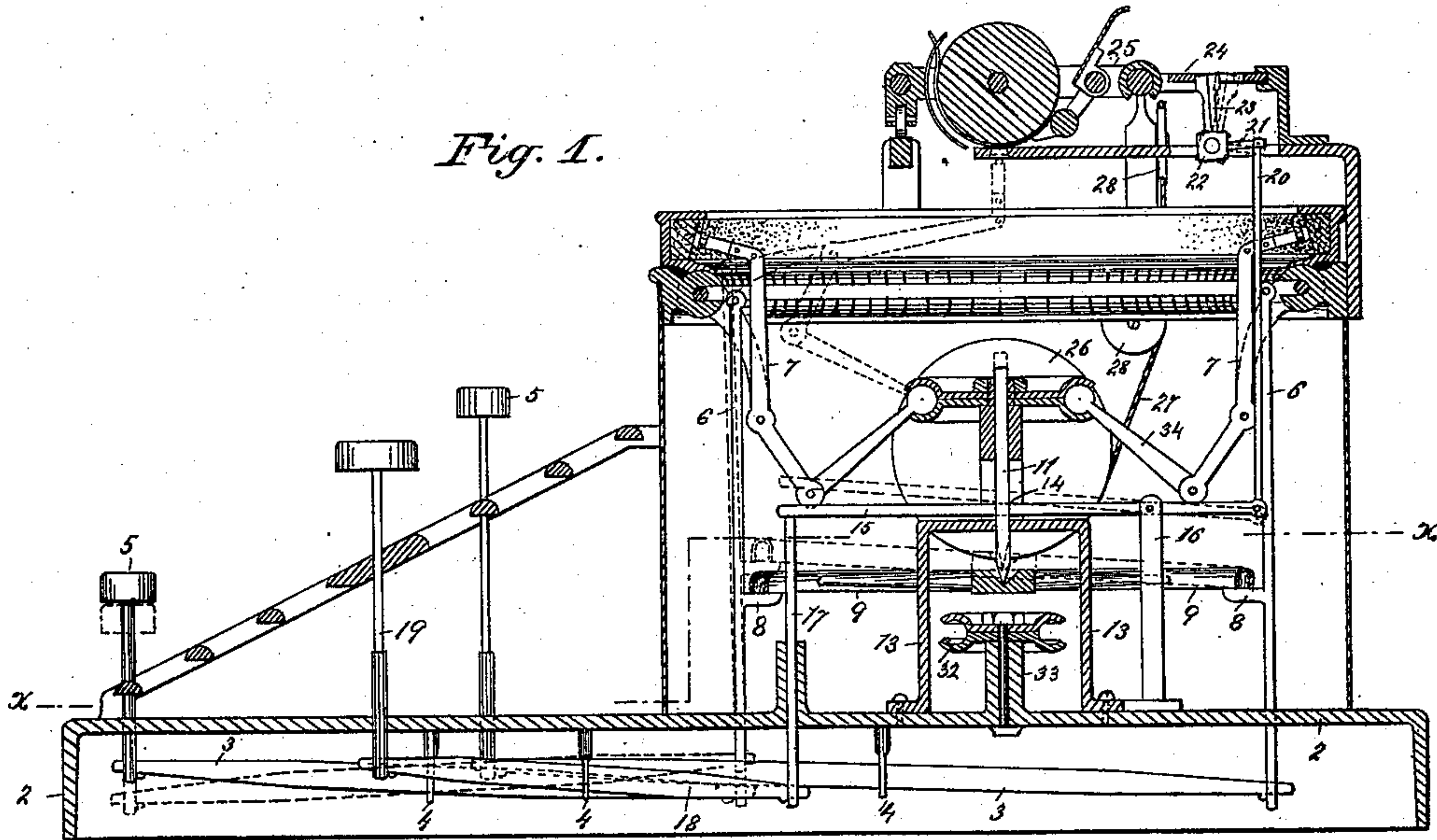
2 Sheets—Sheet 1.

G. W. N. YOST.  
TYPE WRITING MACHINE.

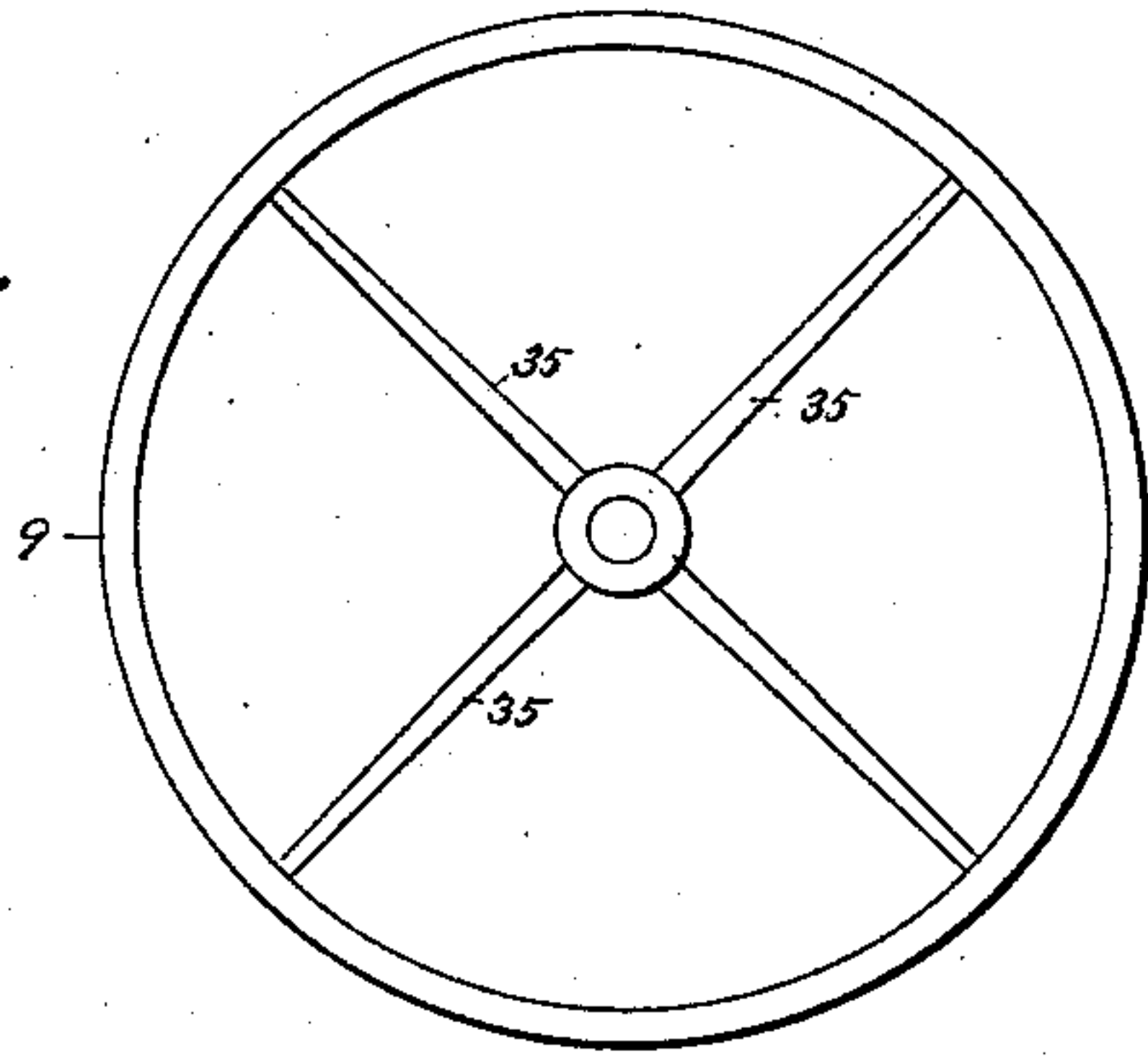
No. 522,333.

Patented July 3, 1894,

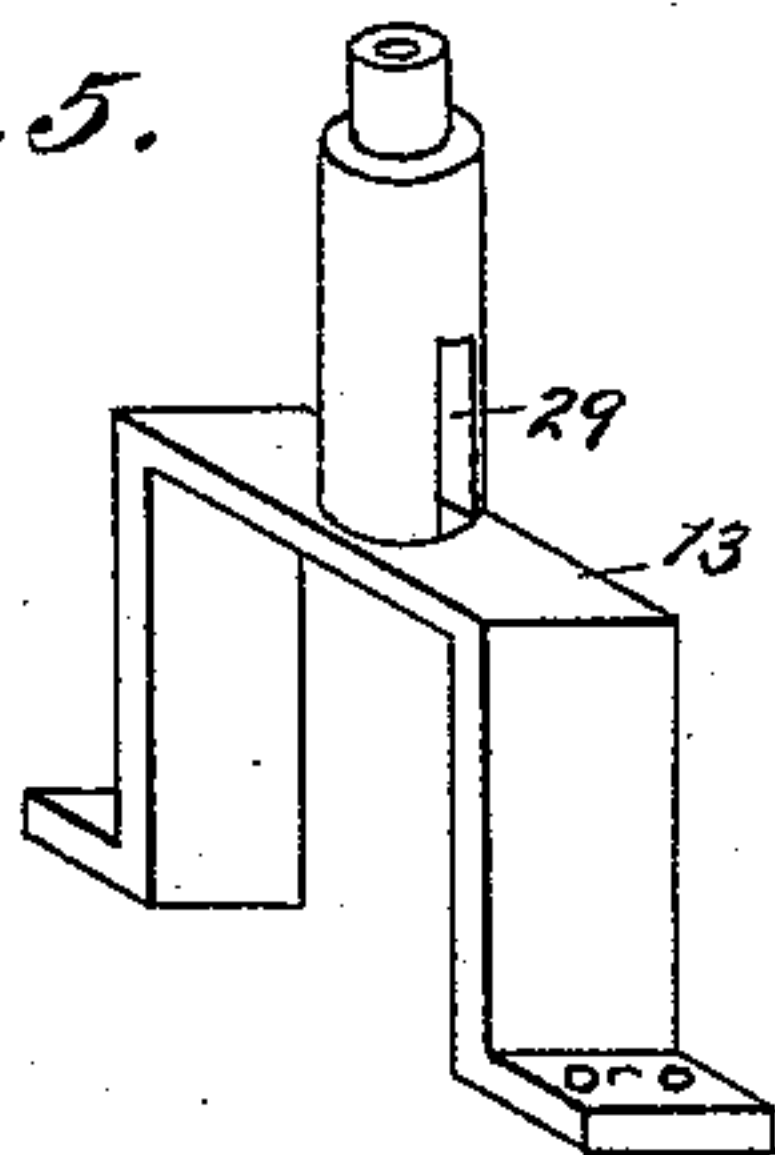
*Fig. 1.*



*Fig. 2.*



*Fig. 5.*



*Attest:*

*M. E. Lees.*

*Martin Grayden*

*Inventor:*

*George W. N. Yost*

*By Jacob Felbel*

*Atty:*

(No Model.)

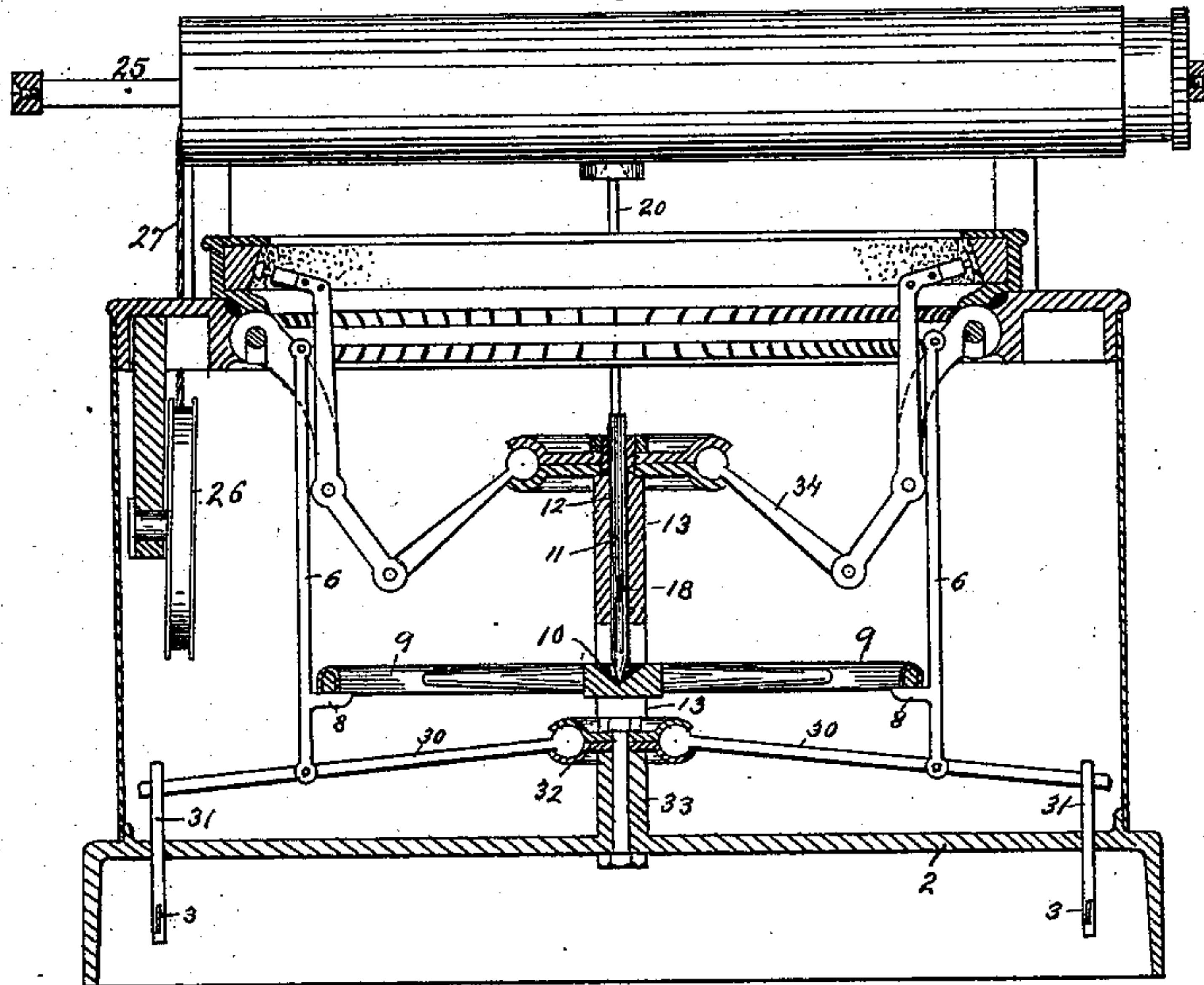
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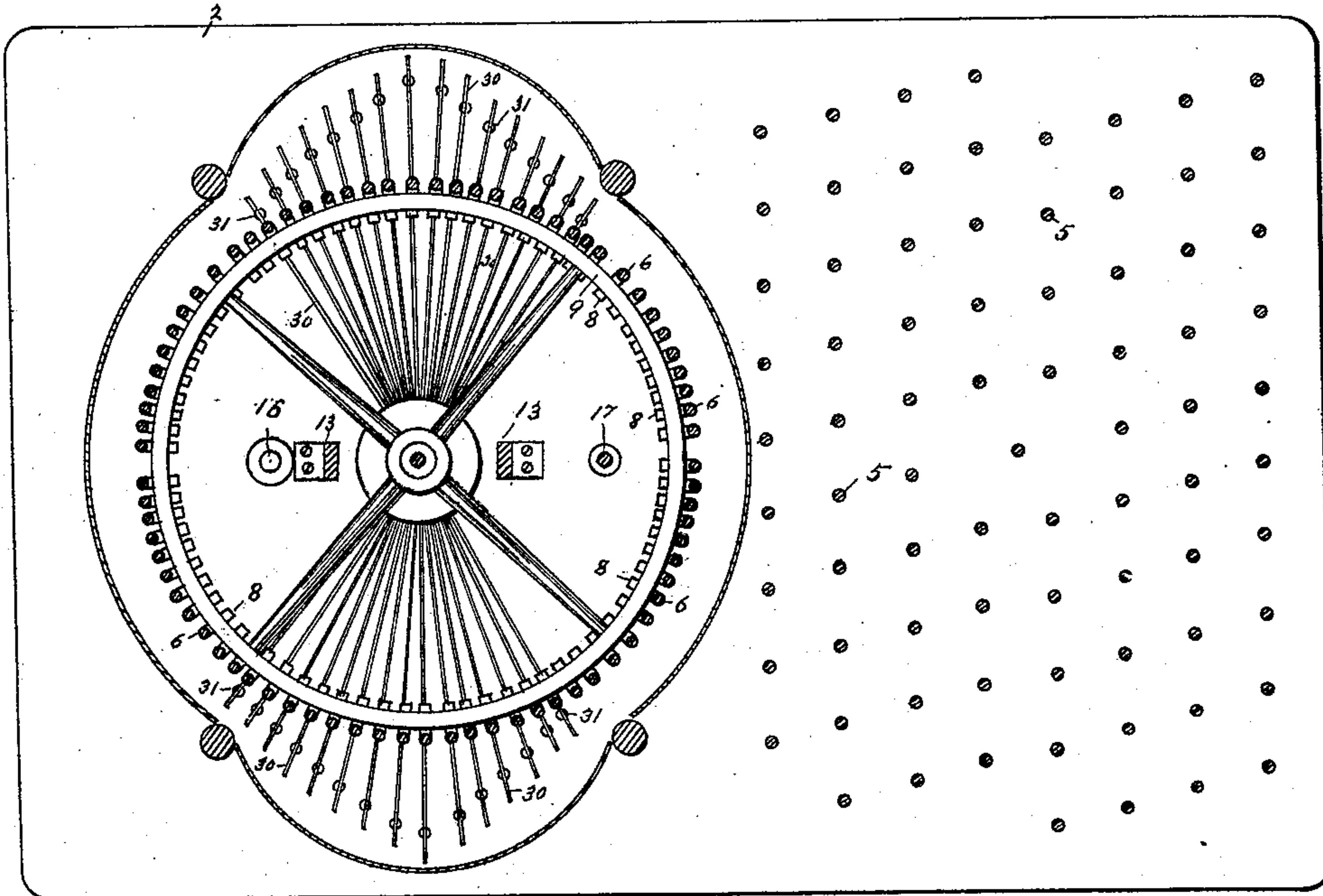
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*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

GEORGE W. N. YOST, OF NEW YORK, N. Y., ASSIGNOR TO THE YOST WRITING MACHINE COMPANY, OF SAME PLACE.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 522,333, dated July 3, 1894.

Application filed May 18, 1889. Serial No. 311,301. (No model.) Patented in England November 26, 1889, No. 5,136.

*To all whom it may concern:*

Be it known that I, GEORGE W. N. YOST, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention is embodied in the British Patent No. 5,136 granted to me and bearing date November 26, 1889.

My present invention in type-writing machines relates particularly to the universal-bar, or the means for actuating the escapement mechanism of the paper-carriage.

In a prior patent granted March 26, 1889, No. 400,383, to myself and Charles E. Merritt, is shown, described, and claimed a circular universal-bar adapted to be moved by any one of a surrounding series of connecting-rods, and by such movement through intermediate connections, affect the letter-space mechanism of the paper-carriage. In said patent the connecting-rods are joined to the type-carriers and the key-levers and are adapted to actuate the type-carriers by a downward movement. On said connecting-rods are provided lugs or offsets which move or vibrate the centrally-supported universal-bar at each downward pull of the connecting-rod. A spring is provided for returning the universal-bar and its connections to normal position.

As it is sometimes desirable to operate the type-carriers by an upward push on the connecting-rods, I have modified the patented construction to adapt it to this specific mode of operation.

My invention consists in the features of construction and combinations and arrangements of parts hereinafter more fully described and particularly set forth in the appended claims.

In the accompanying drawings, Figure 1 is a central vertical section of a type-writing machine embodying my invention. Fig. 2 is a plan view of the universal-bar or ring detached. Fig. 3 is a central transverse section of the machine represented at Fig. 1. Fig. 4

is a horizontal section taken at the dotted line  $x, x$ , Fig. 1. Fig. 5 is a perspective view of the center-post or spindle-support.

In the several views the same part will be found designated by the same numeral of reference.

2 represents the bed-plate; 3, the key-levers; 4 the key-lever fulcrum-posts; 5 the finger-keys; 6 the connecting-rods, and 7 the type-bars or carriers.

The connecting-rods are vertically-arranged and are disposed in a circle. Each one is provided with a radial lug, offset, or projection 8.

9 designates a circular universal-bar or ring, resting upon and supported by the series of radial offsets or projections 8.

At the hub or center of the universal-bar or ring is a conical depression 10, into which is stepped the conical lower end of a spindle 11, which slides in a bearing 12 formed in a bracket or support 13 fastened at its lower end to the bed-plate. Through a slot 14 in said spindle extends a lever 15 which is fulcrumed in a post or standard 16 rising from the bed-plate. The front end of this lever rests upon or is jointed to a vertical link 17 attached or connected to the space-key lever 18 which is provided with a suitable operating-key as 19. The rear end of the lever 15 is pivoted to the lower end of a rod or link 20 depending from a rocker-arm 21 that projects rearwardly from an oscillatory trunnion 22 which holds the duplex feed-dogs 23, and vibrates them back and forth between the teeth of the compound feed-rack 24, carried by the paper-carriage 25.

It is unnecessary to describe in detail, further, the feed or escapement mechanism or the paper-carriage, as they may be of any well-known or desired construction. The paper-carriage is driven or pulled toward the left of the machine preferably by a spring-drum 26, from which extends a cord or flexible connection 27 that, after running over pulleys 28, is connected to the paper-carriage. But some other well-known or suitable driving-mechanism may be employed in lieu of that referred to.

The type-carriers shown are those made the



subject of the United States Letters Patent No. 400,200, and employed in the type-writer known as the "Yost" machine. Instead of these type-carriers others may be used if desired.

The support or standard 13 is slotted at 29 to allow for the vibration of the universal-lever 15 and is forked or bifurcated at its lower end to straddle the hub or center of the universal-ring.

Some of the vertically-arranged connecting-rods 6 connect directly with the key-levers 3, as shown at Fig. 1, while others connect therewith indirectly, through sub-levers 30 and vertical links 31, as illustrated at Fig. 3. The sub-levers are fulcrumed in bearings 32 mounted on a post 33 made integral with the bed-plate. The sub-levers 30 are employed to obtain what is known as "straight stringing," and this special feature is the invention of another, as is also the peculiar construction of bearings for the sub-levers, and for the guiding-links 34 of the type-movement.

In assembling the machine, the sub-lever bearings are first put in place; then the legs of the bifurcated bracket 13 are passed down between the spokes 35 of the universal-ring and screwed to the bed-plate. Then the key-levers, sub-levers, connecting-rods and type-carriers, &c., are placed in position, as shown. When the assembling is completed the under side of the universal-ring rests upon the lugs or projections 8 of the connecting-rods.

It will be observed that the key-levers are levers of the first order and that as their outer ends are depressed the connecting-rods are forced upward. This same movement of each connecting-rod occurs whether the key-levers connected directly to the connecting-rods or those connected by the sub-levers are actuated.

The universal-ring acts as a lever of the second order, as will now more clearly appear. Referring to Fig. 1 it will be seen that the foremost finger-key is represented in dotted lines to have been depressed. When this occurs the rear end of the key-lever 3 rises and forces up the connecting-rod 6 associated with it. As the connecting-rod is pushed up the type-carrier moves to the printing-point and the lug or projection 8 acts upon the universal-bar or ring, lifting it on one side to the dotted line position illustrated. As this side of the ring is elevated the diametrically opposite portion bears upon the opposite lug or projection 8, which then becomes the fulcrum for the ring.

During the lifting or vibration of the ring the spindle 11 is carried up and the lever 15 vibrated to depress the link 20 and actuate the escapement-devices. Upon releasing the pressure on the finger-key the parts all return to their normal positions by gravity aided by a spring if desired. If the hind-

most finger-key 5 be depressed (see Fig. 1), its connecting-rod 6 will be lifted and will actuate the universal-ring and its connections to the escapement, in the manner above explained, in which case the fulcrum of the universal-ring will be that connecting-rod opposite the one being lifted. Hence no matter which connecting-rod of the circular series employed is pushed up the universal-ring will be lifted at that point and will take a bearing on or become fulcrumed on the connecting-rod diametrically opposite the one being actuated.

When the key-levers associated with the sub-levers 30 are operated the link 31 is lifted, the sub-lever vibrated, and the connecting-rod forced upwardly to effect the universal-ring in the manner before explained.

If the space-key 18 be actuated the rod 17 is lifted and the lever 15 vibrated to effect the feed of the carriage without disturbing or actuating the connecting-rods 6 or the universal-bar.

When the lever 15 is vibrated by means of the space-key the spindle 11 is elevated slightly from contact with the hub of the universal-bar, but returns to position as soon as the pressure on the space-key is removed. If desired however, the slot in the spindle may be elongated so that the spindle may remain at rest when the space-key is struck.

Numerous features are herein shown of my own invention and that of others for which separate applications for Letters Patent will shortly be filed.

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

1. In a type-writing machine, the combination of a series of vertical connecting-rods arranged in a circle and provided with lugs or projections, a circular universal-bar resting upon and supported by said projections, and means, substantially as described for pushing up said connecting-rods and actuating said universal-bar in the manner described.

2. In a type-writing machine, the combination of a series of vertical connecting-rods arranged in a circle and provided with lugs or projections, a circular universal-bar resting upon and supported by said projections, a vertical reciprocatory spindle above said universal-bar, a lever connected to said spindle and connections between said lever and the escapement devices.

3. In a type-writing machine, the combination of a series of vertical connecting-rods arranged in a circle and provided with lugs or projections, a universal-ring resting upon said projections, a support, as 13, extending above said ring and having forks or legs which pass between the spokes of the ring to the base-plate, a reciprocatory spindle passing down to the hub of said ring, a bearing



or guide for said spindle projecting upwardly  
from said support, a lever, as 15, connected  
to said spindle, connections between said le-  
ver and the escapement devices, and means,  
5 substantially as described for pushing up said  
connecting-rods.

Signed at New York, in the county of New

York and State of New York, this 15th day of  
May, A. D. 1889.

GEORGE W. N. YOST.

Witnesses:

EDWIN C. DUSENBURY,  
JACOB FELBEL.