

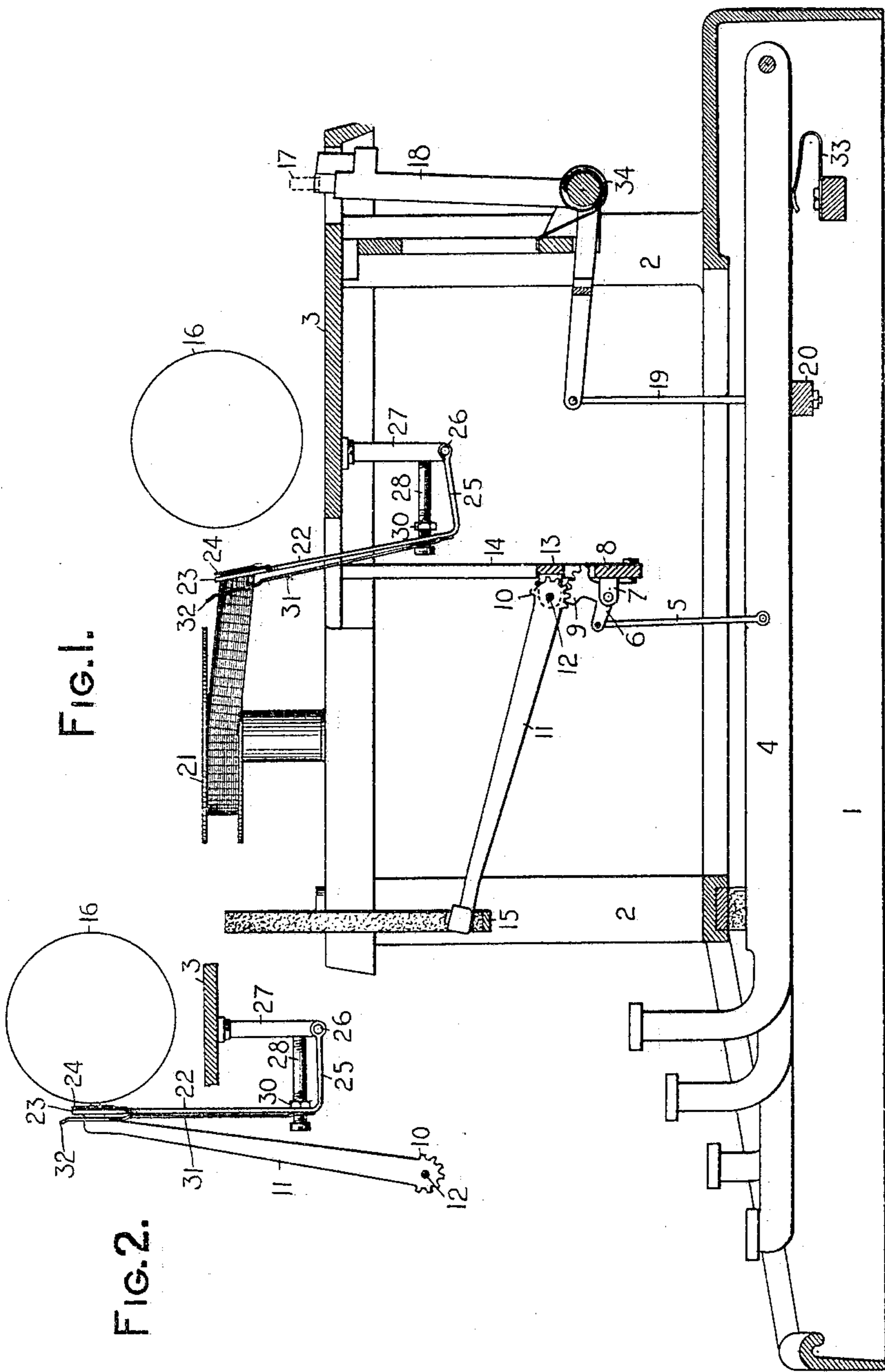
No. 775,394.

PATENTED NOV. 22, 1904.

E. B. CRAM.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 17, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES.

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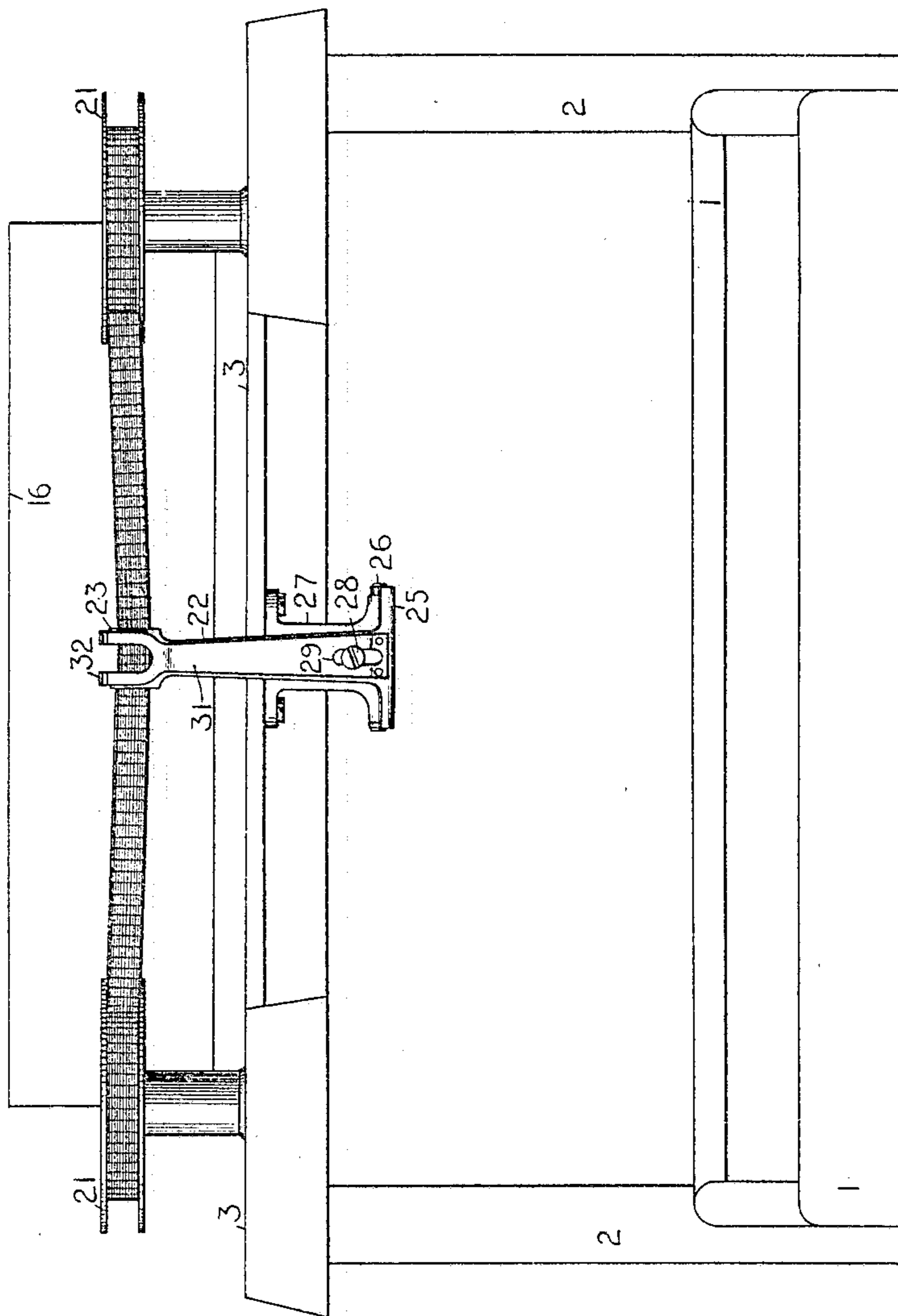
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2 SHEETS—SHEET 2.

FIG. 3.



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EDWIN B. CRAM, OF BROOKLYN, NEW YORK, ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 775,394, dated November 22, 1904.

Application filed May 17, 1901. Serial No. 60,633. (No model.)

To all whom it may concern:

Be it known that I, EDWIN B. CRAM, a citizen of the United States, and a resident of the borough of Brooklyn, city of New York, in the county of Kings and State of New York, have
5 invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates, primarily, to the ribbon mechanism of front-strike writing-machines. One of its objects is to provide a simple vibrator for causing the ribbon to cover
10 and uncover the printing-point at each type-stroke, and another object is to provide means at said vibrator for aiding the rebound of the type-bars from the platen.

To these ends the invention consists in certain combinations of devices, features of construction, and arrangements of parts, all as
20 will be fully hereinafter described, and particularly set forth in the concluding claims.

In the accompanying drawings, Figure 1 is a central vertical section taken longitudinally of a front-strike writing-machine embodying
25 my improvements, the parts being shown in normal position. Fig. 2 is a view illustrating the printing position of the ribbon-vibrator and type-bar shown at Fig. 1. Fig. 3 is a front view illustrating the parts in normal position.

In the several views only so much of the machine is illustrated as pertains to my invention.

Similar parts are designated by similar numerals of reference.

The frame of the machine comprises base 1, corner-posts 2, and top plate 3. In the base are mounted key-levers 4, which are connected by links 5 to bell-cranks 6, the latter being
40 mounted upon brackets 7, fixed upon a segment 8 and having toothed arms 9, which mesh with toothed hubs 10, provided upon rearwardly-striking type-bars 11, which are pivoted at 12 in brackets 13, mounted upon a segment 14. At their forward ends the type-bars rest upon a curved pad 15. Upon the depression of any key-lever the rod 5 is pulled down and the bell-crank 6 vibrated, whereby the type-bar 11 is swung up to print. A

platen 16, upon the front side whereof the type impressions are made, travels longitudinally over the top plate and is connected to a letter-spacing rack 17, the latter being controlled by spacing-dogs carried upon the upper end of a rocker 18, which supports, by means of links 19, a universal bar 20, the latter extending transversely beneath the key-levers, so that at each key operation the platen is enabled to move a letter-space in the usual manner.

Upon either side of the machine and forwardly of the platen is suitably mounted a pair of ribbon-spools 21, the ribbon extending across the machine from spool to spool forwardly of the platen and being threaded through a guide which is provided upon the upper end of a vibrator 22 and consists of a fork 23, formed upon said vibrator, and a fork 24, mounted just in rear thereof. The vibrator stands just in front of and a little below the printing-point, so as to disclose the writing, and at its lower end is bent rearwardly at 25 and pivoted at 26 upon the lower end of a bracket 27, depending from the under side of the top plate 3. It will be perceived that the entire weight of the vibrator is forward of the pivot 26, and hence that the vibrator constantly tends to drop away from the printing-point. For limiting its drop I provide an adjustable stop-screw 28, which passes rearwardly through a vertical slot 29, formed in the lower end of the vibrator, and is threaded at its rear end into the bracket 27, the head of the screw overhanging the sides of the slot, and hence serving as a support or stop for the vibrator.

The rearward movements of the vibrator are produced by the impact of the type-bars during the last portion of the printing strokes and are limited by an adjustable nut or nuts 30, arranged upon the screw 28.

Fixed upon the lower end of the upright arm 22 of the vibrator is an upwardly-directed leaf-spring 31, whose upper end normally stands ajar from the upper end of the vibrator and is adapted directly to receive the impact of the type-bars, the upper end of said spring being forked at 32, so as to afford an

opening for the types and the blows of the type-bars being received upon the cross-arm portion of the fork.

When the type-bar in moving toward the
 5 platen strikes said spring 31, it is forced rearwardly, together with the vibrator 22, until the latter is checked by the nut 30, whereupon by the further movement of the type-bar the spring 31 is flexed toward said vibrator until
 10 the Fig. 2 position is reached. Upon the release of the key the spring 31 aids in throwing the type-bar away from the platen, the fulcrum or bearing of said spring consisting of the lower portion of the vibrator-arm 22,
 15 the latter bearing against the nut 30. As soon as the spring has regained its normal position with reference to said vibrator or becomes unflexed both the spring and the vibrator follow the type-bar or drop until arrested by the
 20 head of the screw 28.

It will be seen that the screw 28 may be adjusted so as to allow the vibrator to drop more or less away from the platen and that the nut 30 may be adjusted so that the ribbon
 25 may be brought as close as desired to the platen before the vibrator is arrested. The slot 29, which is formed in both the lower end of the spring 21 and the lower end of the vibrator 22, may be of considerable length, so
 30 as to allow the required range of adjustment.

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

1. In a type-writing machine, the combination with a platen and a series of type-bars,
 35 of a ribbon-vibrator, and a separate member adapted to be struck by the type-bars as they approach the platen, and to transmit the motion to said ribbon-vibrator.

2. In a type-writing machine, the combination with a platen and a series of type-bars,
 40 of a ribbon-vibrator having a yielding part which is struck by the type-bars as they approach the platen and which stands in front of the platen and normally tends away therefrom and which is moved rearwardly toward
 45 the platen by the impact of the type-bars; and stops for limiting the movements of the vibrator toward and away from the platen.

3. In a type-writing machine, the combination with a platen and a series of type-bars,
 50 of a ribbon-vibrator having a yielding part which is struck by the type-bars as they approach the platen and which is arranged forwardly of the printing-point and pivoted at its lower end below the platen; said part normally tending away from the platen, and moving rearwardly upon its pivot by the impact
 55 of the type-bars; and stops for limiting its movement toward and away from the platen.

4. In a front-strike writing-machine, the combination with a platen and a series of type-bars, of a ribbon-vibrator 22 standing in front
 60 of the printing-point and having a bent lower portion 25 pivoted at 26 to a bracket 27, said vibrator having a part which is struck by the

type-bars as they approach the platen, whereby the vibrator is moved rearwardly toward the platen upon said pivot 26, the weight of the vibrator tending constantly to swing it forwardly away from the platen.

5. In a front-strike writing-machine, the combination with a platen and a series of type-bars, of a ribbon-vibrator 22 standing in front
 70 of the printing-point and having a bent lower portion 25 pivoted at 26 to a bracket 27, said vibrator having a part which is struck by the type-bars as they approach the platen, whereby the vibrator is moved rearwardly toward
 75 the platen upon said pivot 26, the weight of the vibrator tending constantly to swing it forwardly away from the platen, stop-screw 28 threaded into bracket 27, and nut 30 upon said
 80 screw.

6. In a front-strike writing-machine, the combination with a platen and a series of type-bars, of a ribbon-vibrator 22 standing in front
 85 of the printing-point and having a bent lower portion 25 pivoted at 26 to a bracket 27, said vibrator having a part which is struck by the type-bars as they approach the platen, whereby the vibrator is moved rearwardly toward
 90 the platen upon said pivot 26, the weight of the vibrator tending constantly to swing it forwardly away from the platen, stop-screw 28 threaded into bracket 27, nut 30 upon said
 95 screw, and slot 29 formed in said vibrator for said stop-screw 28.

7. In a front-strike writing-machine, the combination with a platen and a series of type-bars, of a ribbon-vibrator arranged forwardly
 100 of the platen and movable toward and away from the platen, means for limiting the movement of the vibrator toward the platen, and a spring mounted upon said vibrator and standing forwardly thereof and in the path of the
 105 type-bars, said spring being flexed by the type-bars during their printing strokes.

8. In a front-strike writing-machine, the combination with a platen and a series of type-bars, of a ribbon-vibrator arranged forwardly
 110 of the platen and pivoted therebeneath, a spring secured at its lower end to said vibrator and directed upwardly in front thereof and standing forwardly from said vibrator and in the path of the type-bars, said vibrator and
 115 spring being moved together by the type-bars during the printing strokes of the latter, and the spring being flexed by the type-bars, and means for limiting said movement of the vibrator.

9. In a front-strike writing-machine, the combination with a platen and a series of type-bars, of a vibrator 22 pivoted at its lower end
 120 and extending up in front of the printing-point and tending normally away from the platen, spring 31 fixed at its lower end upon said vibrator and forked at its upper end and standing normally ajar from the vibrator and
 125 in the path of the type-bars so as to be flexed by the latter, slot 29 formed in the spring 31

and vibrator 22, screw-stop 28 passing rearwardly through said slot, and nut 30 upon said screw.

5 10. In a writing-machine, the combination with a platen and a series of type-bars, of a ribbon-vibrator, and a spring member adapted to be struck by the type-bars as they approach the platen, said member operating to actuate said ribbon-vibrator.

10 11. In a writing-machine, the combination with a platen and a series of type-bars, of a ribbon-vibrator, and a spring adapted to be compressed by the type-bars as they approach the platen, said spring tending when compressed to operate the ribbon-vibrator and to
15 return the type-bars toward normal position.

12. In a writing-machine, the combination with a platen and a type-carrier, of a yielding

member struck by said type-carrier, and a ribbon-vibrator operated by said yielding member. 20

13. In a writing-machine, the combination with a platen and a series of type-bars, of a yielding member struck by said type-bars, a ribbon-vibrator operated by said yielding member, and stops for limiting the movement of said vibrator. 25

Signed in the borough of Manhattan, city of New York, in the county of New York and State of New York, this 16th day of May, A. D. 30
1901.

EDWIN B. CRAM.

Witnesses:

K. V. DONOVAN,
E. M. WELLS.