

Jan. 6, 1953

D. F. PUTNAM ET AL

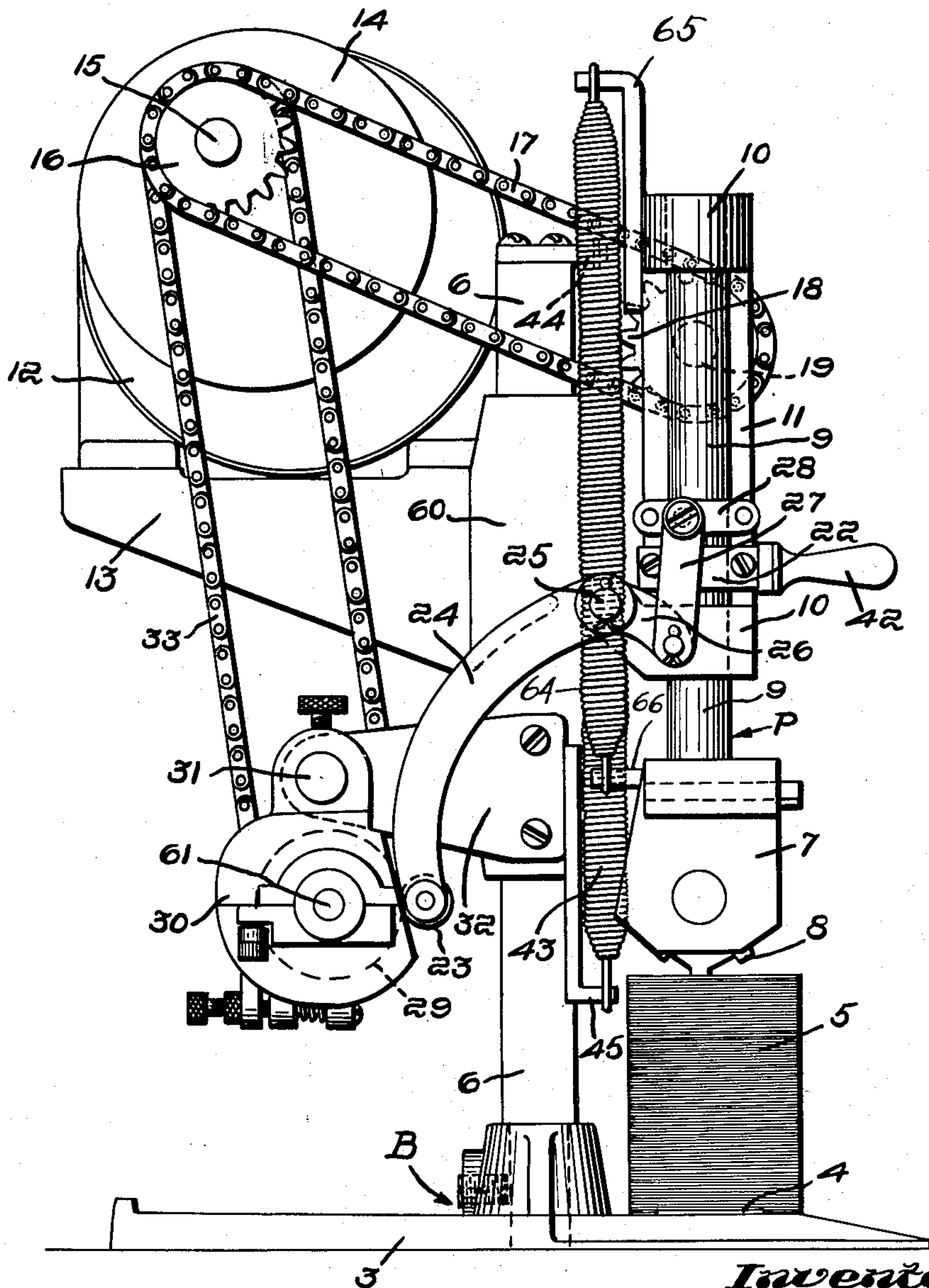
2,624,279

MARKING MACHINE

Filed Dec. 30, 1949

5 Sheets-Sheet 1

Fig. 1.



Inventors:
Otto B. Meyers,
David F. Putnam,
Charles F. Robbins,
by **Hard Smith Tennant**
Attorneys

Jan. 6, 1953

D. F. PUTNAM ET AL

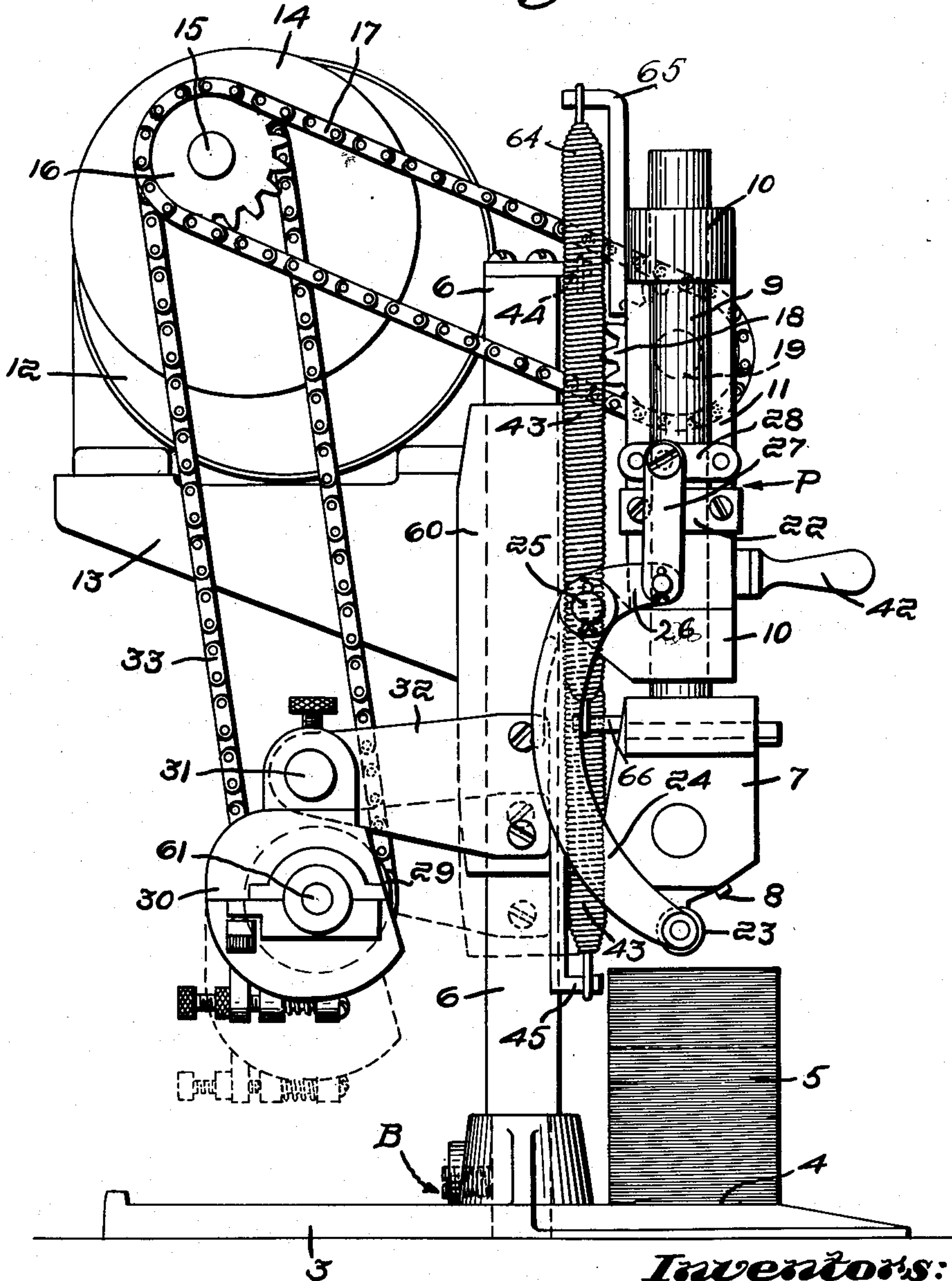
2,624,279

MARKING MACHINE

Filed Dec. 30, 1949

5 Sheets-Sheet 2

Fig. 2.



Inventors:
Otto B. Meyers,
David F. Putnam,
Charles F. Robbins,
by *Harold Smith Tennant*
Attorneys

Jan. 6, 1953

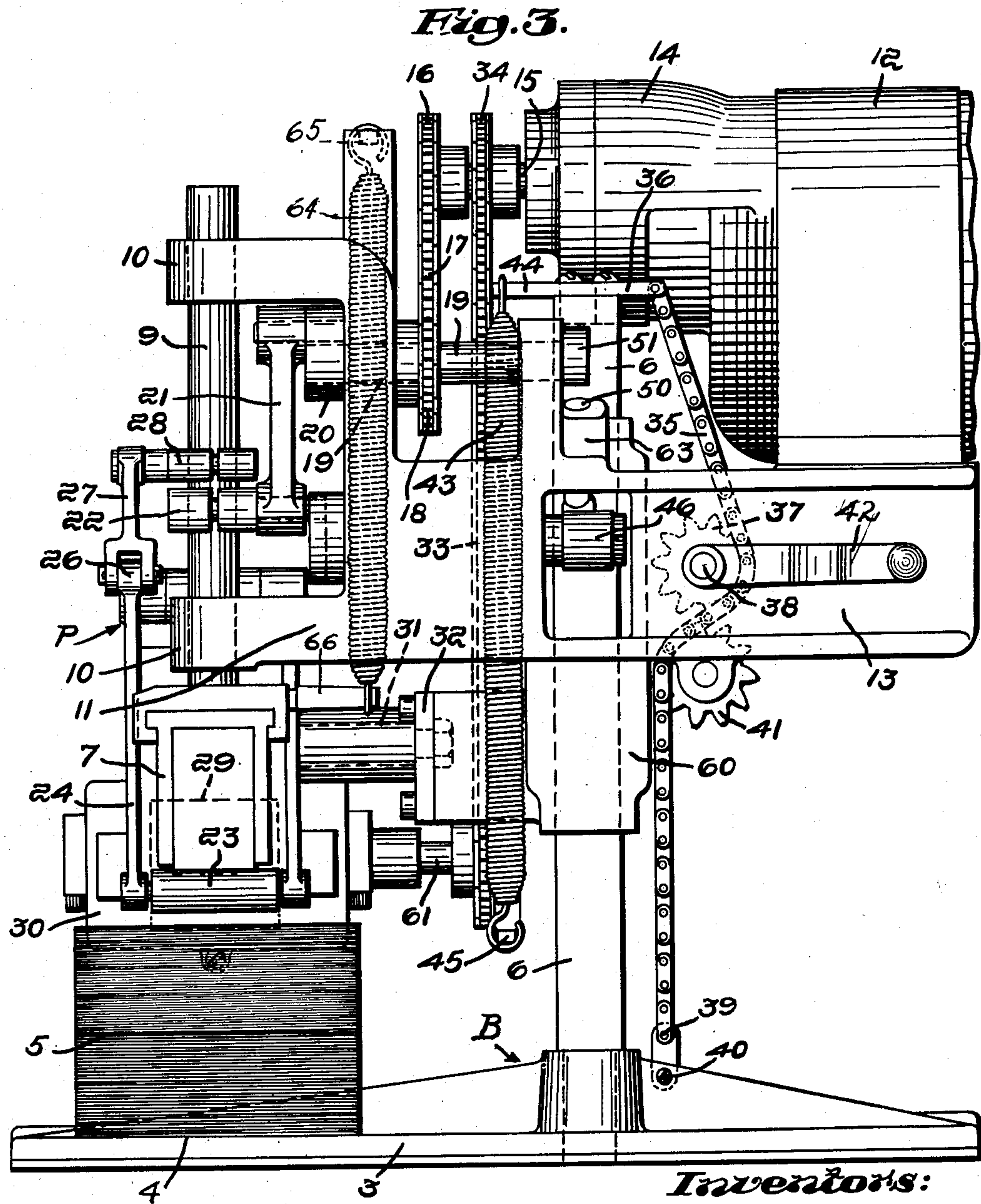
D. F. PUTNAM ET AL

2,624,279

MARKING MACHINE

Filed Dec. 30, 1949

5 Sheets-Sheet 3



Inventors:
Otto B. Meyers,
David F. Putnam,
Charles F. Robbins,
by *Heard Smith Tennant*
Attorneys

Jan. 6, 1953

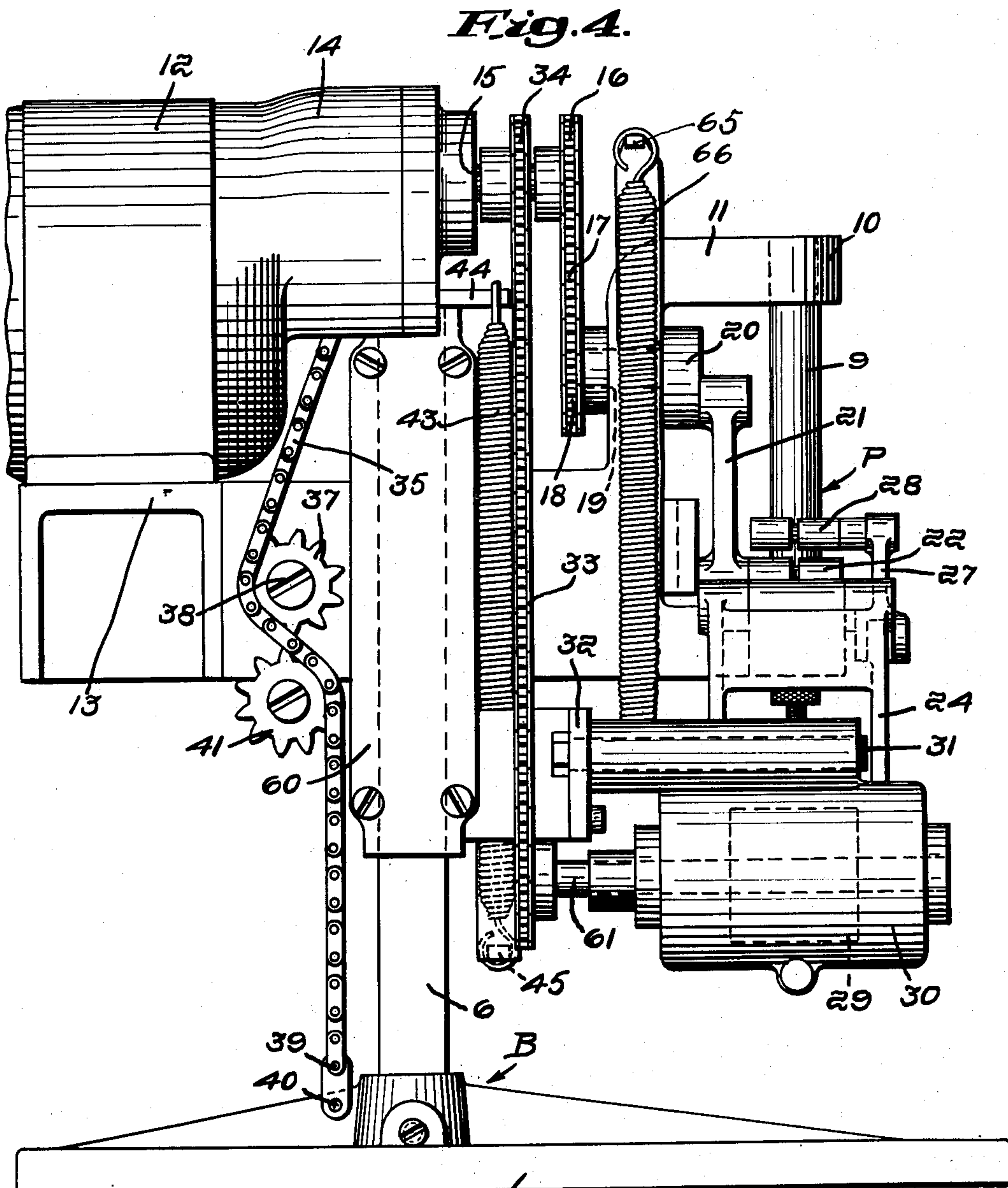
D. F. PUTNAM ET AL

2,624,279

MARKING MACHINE

Filed Dec. 30, 1949

5 Sheets-Sheet 4



Inventors:
Otto B. Meyers,
David F. Putnam,
Charles F. Robbins,
by *Heard Smith Tennant*
Attorneys

Jan. 6, 1953

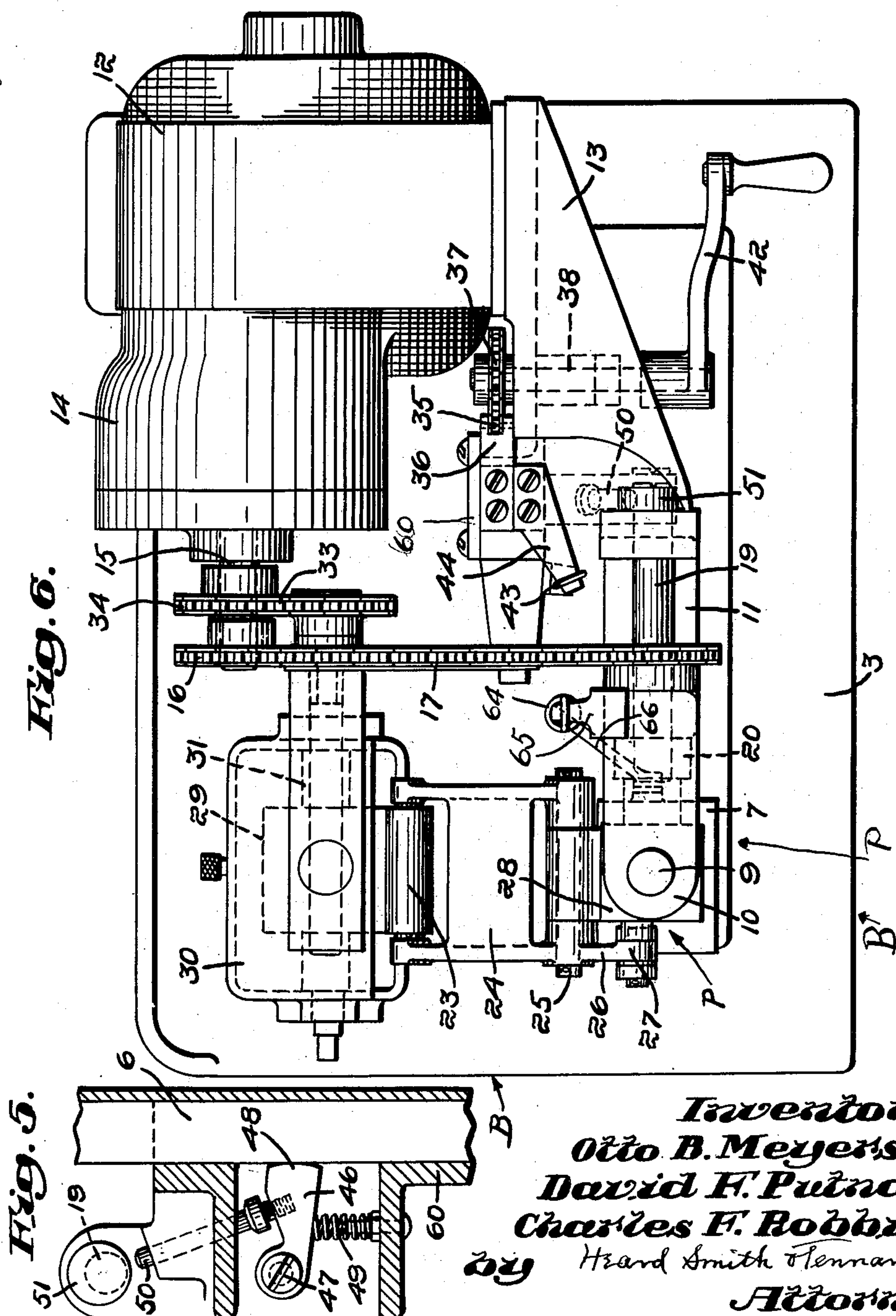
D. F. PUTNAM ET AL

2,624,279

MARKING MACHINE

Filed Dec. 30, 1949

5 Sheets-Sheet 5



Inventors:
Otto B. Meyers;
David F. Putnam,
Charles F. Robbins,
Hazard Smith Tennant
Attorneys

UNITED STATES PATENT OFFICE

2,624,279

MARKING MACHINE

David F. Putnam and Charles F. Robbins, Keene, N. H., and Otto B. Meyers, Quakertown, Pa., assignors to Markem Machine Company, Keene, N. H., a corporation of New Hampshire

Application December 30, 1949, Serial No. 136,056

6 Claims. (Cl. 101—321)

1

This invention relates to marking machines of the type which are constructed to make an imprint on individual sheets or workpieces which are presented to the machine in a stack or pile.

Such machines frequently are provided with a vertically moving printing head carrying type which upon its down stroke makes an imprint on the top sheet of the stack of sheets, the printed sheet being removed from the stack by the operator during the up stroke of the printing head, so that upon the succeeding down stroke an unprinted sheet will be presented at the top of the stack to receive the imprint from the printing head.

In machines of this type it has been customary to provide a vertically moving platen or support for the stack of sheets to be printed, the construction being such that as the successive top sheets of the stack receive their imprint and are removed therefrom, the platen or work support will move upwardly as necessary to present the top sheet of the stack always in proper position to receive the imprint from the printing head when it makes its downward movement.

It is one of the objects of the present invention to provide a novel marking machine of this type in which the stack or pile of sheets or workpieces is supported on a fixed stationary platen or work support and in which the printing unit, which includes the printing head and the inking mechanism therefor, is mounted for vertical movement relative to the stationary platen or work support, so that as the height of the pile or stack of unprinted sheets is diminished by the progressive removal of the top printed sheet, the printing unit will be correspondingly lowered so that the printing head at the end of its down stroke will always be properly positioned to make an imprint on the top sheet of the stack.

Another object of the invention is to provide a machine of this type which has incorporated therein means responsive to variations in the height of the stack of unprinted sheets to maintain the printing unit in a proper position for making an imprint on the top sheet of the stack.

Other objects of the invention are to improve printing machines of this type in the various features which will be hereinafter set forth.

In the drawings wherein we have shown a selected embodiment of the invention,

Fig. 1 is a view showing a machine with the printing head in printing position.

Fig. 2 is a similar view showing the printing head in raised position.

Fig. 3 is a view of Figs. 1 and 2 looking toward the left.

2

Fig. 4 is a view of Figs. 1 and 2 looking toward the right.

Fig. 5 is a fragmentary sectional view showing the locking device for locking the printing unit in its adjusted position.

Fig. 6 is a top plan view of the machine.

Our improved marking machine comprises a base or work-supporting unit which is provided with a stationary platen or work support, and a printing unit which includes a printing head having type, means for inking the type, and means for moving the printing head to and from printing position, the printing unit being mounted on the base or work-supporting unit for bodily vertical movement.

The base or work-supporting unit is indicated generally by the reference letter B, and the printing unit is indicated generally by the reference letter P.

The base unit B comprises a base portion 3 which is provided with a platen or work-supporting section 4 on which the work, in the form of a pile or stack 5 of sheets or workpieces, is supported. Said base unit B also includes a vertical supporting post 6 on which the printing unit P is mounted for vertical movement.

The printing unit P is of the familiar type which includes a printing head 7 carrying adjustable type members 8 and which is secured to the lower end of a plunger 9 that is vertically movable in bearings 10 forming part of the frame 11 of the printing unit.

The printing head 7 is given its vertical movement into and out of printing position by means of a motor 12 which is mounted on a motor-supporting bracket 13 forming part of the frame 11. Associated with the motor is suitable reducing gearing enclosed in a housing 14, said gearing having a power take-off shaft 15 provided with a sprocket wheel 16 that is connected by a sprocket 17 with a sprocket wheel 18 on a crank shaft 19 journaled in the frame. This crank shaft has a crank member 20 which is connected by a link or pitman 21 with a collar 22 that is clamped to the plunger 9. With this arrangement the motor 12 operates to give the plunger 9 and the printing head 7 carried thereby the requisite vertical reciprocating movement.

Any usual means may be employed for inking the type characters 8, the inking operation usually being performed when the printing head is in its elevated position.

As herein shown the inking of the type 8 is accomplished by an ink distributing roll 23 which is carried by a swinging arm 24 pivoted at 25 to the frame 11. Said arm 24 has an ex-

tension 26 connected by a link 27 with a collar 28 secured to the plunger 9. With this arrangement up and down movement of the plunger will operate through the link 27 and arm 24 to swing the inking roll 23 from the position shown in Fig. 1 to that shown in Fig. 2, the ink roll being in its backward position, Fig. 1, when the printing head is in its printing position and being in its forward inking position shown in Fig. 2 when the printing head is raised.

The ink distributing roll is supplied with ink from an ink roll 29 operating in an ink reservoir 30 which is supported on a rod 31 carried by a bracket 32 forming part of the frame 11 of the printing unit. The ink roll 29 is positively rotated, for which purpose the shaft 61 of the roll 29 has fast thereon a sprocket wheel which is connected by a sprocket chain 33 to a sprocket wheel 34 mounted on the power take-off shaft 15.

As stated above, the printing unit is mounted on the supporting post 6 for bodily vertical movement, the frame 11 of the printing unit being formed with an elongated bearing portion 60 having a vertical opening through which the post 6 extends. The post 6 is preferably square in cross section and the opening in the bearing portion is of a size and shape to fit the post.

Means responsive to any variations in the height of the stack 5 of sheets to be printed is employed to determine the position of the printing unit frame 11 and thereby maintain the latter in such position that at the end of each downward movement of the printing head 7, it will be properly positioned to make an imprint on the top sheet of the stack 5.

The means for adjusting the printing unit vertically includes a manually operated device for raising the printing head in addition to the means which are responsive to variations in the height of the stack 5 above referred to.

For thus manually raising the printing unit, there is provided a sprocket chain 35 which is anchored at its upper end to a plate 36 carried by the upper end of the supporting post 6, said chain passing partially around a sprocket wheel 37 which is carried by a shaft 38 journaled in the frame 11, the lower end 39 of the sprocket chain being anchored to the base 3 as shown at 40. The printing unit frame is provided with an idler sprocket wheel 41 with which the sprocket chain has engagement.

The shaft 38 of the sprocket wheel 37 is provided with a crank arm 42 by which the sprocket wheel 37 can be rotated. If the sprocket wheel 37 is rotated clockwise in Fig. 3, it will walk up the sprocket chain 35 with the result that the printing unit frame will be raised or moved upwardly, and by this means the printing unit can be initially adjusted into a proper position for printing the top sheet of a pile of sheets.

A locking means is provided for locking the printing unit from downward movement, means being provided to release the locking means momentarily each time that the printing head reaches the lower end of its down stroke so that the vertical position of the printing unit may be automatically adjusted to correspond to the height of the stack 5.

The locking device for locking the printing unit from downward movement comprises a locking pawl 46 pivoted at 47 to the frame and having a cam shaped end 48 adapted to engage the supporting post 6, the latter being square in cross section thus providing a flat face for engagement with the locking pawl 46. The locking

pawl is acted on by a spring 49 which tends to move it upwardly into frictional gripping engagement with the post 6 as shown in Fig. 5, thereby locking the frame 11 of the printing unit from downward movement.

Means are provided for momentarily releasing the pawl 46 from its gripping engagement with the supporting post 6 when the printing head 7 is in its lowered position, so that at such time the printing unit frame is free to move downwardly as necessary to bring the type 8 into printing contact with the top sheet of the stack 5. For this purpose the pawl 46 has a pin 50 connected thereto which is adapted to be engaged by a cam 51 on the crank shaft 13, the setting of the cam being such that the pawl 46 will be forced downwardly against its spring 49 just at the moment that the printing head 7 has reached the lower end of its stroke.

If it be assumed that the printing unit is initially adjusted vertically into such a position with relation to a stack 5 of unprinted sheets that the printing head will make a proper printed impression on the top sheet of the stack, it will be evident that as the printed sheets are removed from the top of the stack and the height of the stack gradually diminishes, the momentary release of the locking pawl at each down stroke of the printing head will allow the printing unit to move downwardly at each operation as necessary to maintain the printing head in proper position relative to the top sheet of the stack to make the desired imprint on the top sheet.

The cam 51 is so designed that the release of the locking pawl 46 is but for an instant, said pawl becoming operative to lock the frame 11 against the downward movement before the printing head begins its upward movement so that the frame will remain locked in the position it occupied during the making of the printed impression on the top sheet of the stack.

The weight of the printing unit and the frame 11 is partially counterbalanced by a spring 43, the upper end of which is anchored to an arm 44 secured to the top of the post 6 and the lower end of which is attached to an arm 45 rigid with the frame 11.

When the pawl 46 is released during the printing operation, the unbalanced weight of the frame and printing unit will provide a proper printing pressure to make a satisfactory printed impression on the top sheet of the stack.

The printing head 7 is also partially counterbalanced by a spring 64, the upper end of which is connected to an arm 65 that is secured to the frame 11 and the lower end of which is connected to an arm 66 extending from the printing head 7. By using the counterbalancing spring 64 the up and down movement of the head is cushioned somewhat thereby reducing any vibration which might be caused by the up and down movement of said printing head.

We claim:

1. A printing machine having a base provided with a support for a stack of sheets to be printed, a printing unit mounted on the base for vertical adjustment, said printing unit including a supporting frame, a printing head having type mounted thereon, a motor also mounted thereon and driving connections between the motor and the printing head for giving the latter a vertical reciprocating movement for making repeated printed impressions, and means to adjust the printing unit bodily vertically relative to the base as each printed impression is made, thereby

5

maintaining said printing unit at a proper vertical position for the printing head to make an imprint on the top sheet of the stack at each downward movement, regardless of the diminishing height of the stack as the printed sheets are removed therefrom.

2. A printing machine having a base provided with a non-adjustable support for a stack of sheets to be printed, a printing unit mounted on the base for bodily vertical adjustment relative thereto, said printing unit including a supporting frame, a printing head having type mounted on said frame and printing-head reciprocating means carried by the frame and operative to give the printing head a vertical reciprocating movement toward and from said stack, and means actuated by the printing-head reciprocating means to adjust the printing unit bodily vertically relative to the base as each printing impression is made, thereby maintaining said printing unit at a proper vertical position for the printing head to make an impression on the top sheet of the stack at each downward movement regardless of the diminishing height of the stack as the printed sheets are removed therefrom.

3. A printing machine having a base provided with a non-adjustable support for a stack of sheets to be printed, a supporting frame, a printing head mounted thereon, printing-head reciprocating means carried by the frame and operative to give the printing head a vertical reciprocating movement relative to the supporting frame for making repeated printed impressions, means mounting said supporting frame, together with the printing head and its reciprocating means, on the base for vertical adjustment relative thereto, and means actuated by the printing-head reciprocating means to adjust the supporting frame vertically relative to the base as each printed impression is made, thereby maintaining said supporting frame at the proper vertical position for the printing head to make an imprint on the top sheet of the stack at each downward movement regardless of the diminishing height of the stack as the printed sheets are removed therefrom.

4. A printing machine comprising a base member having a non-adjustable portion for supporting a stack of sheets to be printed, a supporting frame, a printing head mounted thereon, printing-head reciprocating means carried by the frame and operative to give the printing-head a vertical reciprocating motion relative to the supporting frame for making repeated printed impressions, means mounting said supporting frame, together with the printing head and its reciprocating means, on the base for vertical adjustment relative thereto, means to adjust said frame vertically on the base into a position in which the printing head during its down stroke will make a printed impression on the top sheet of a stack

6

of sheets supported on the base, and means actuated by the printing-head reciprocating means to adjust the supporting frame vertically relative to the base as each printed impression is made, thereby maintaining said supporting frame at a proper vertical position for the printing head to make an impression on the top sheet of the stack at each down movement regardless of the diminishing height of the stack as the printed sheets are removed therefrom.

5. A printing machine comprising a base member having a non-adjustable portion for supporting a stack of sheets to be printed, a supporting frame, a printing head mounted thereon, means to give the printing head a vertical reciprocating motion relative to the supporting frame, means mounting said supporting frame on the base for vertical adjustment relative thereto, means to adjust said frame vertically on the base into a position in which the printing head during its down stroke will make a printed impression on the top sheet of a stack of sheets supported on the base, locking means normally locking the supporting frame from downward movement relative to the base and means to release the lock for an instant while each printed impression is being made, whereby at each printing operation the supporting frame will be automatically readjusted vertically to correspond to the diminishing height of the stack due to the removal from the top of the stack of each sheet as it is printed.

6. A printing machine comprising a base member having a non-adjustable portion for supporting a stack of sheets to be printed, a supporting frame, a printing head mounted thereon, means to give the printing head a vertical reciprocating motion relative to the supporting frame, means mounting said supporting frame on the base for vertical adjustment relative thereto, means to adjust said frame vertically on the base into a position in which the printing head during its down stroke will make a printed impression on the top sheet of a stack of sheets supported on the base, locking means normally locking the supporting frame from downward movement, cam means operating in timed relation with the vertical movement of the printing head to release the lock for an instant while each printed impression is being made.

DAVID F. PUTNAM.
CHARLES F. ROBBINS.
OTTO B. MEYERS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,811,359	Kern	June 23, 1931