

947,254.

2 SHEETS—SHEET 1.

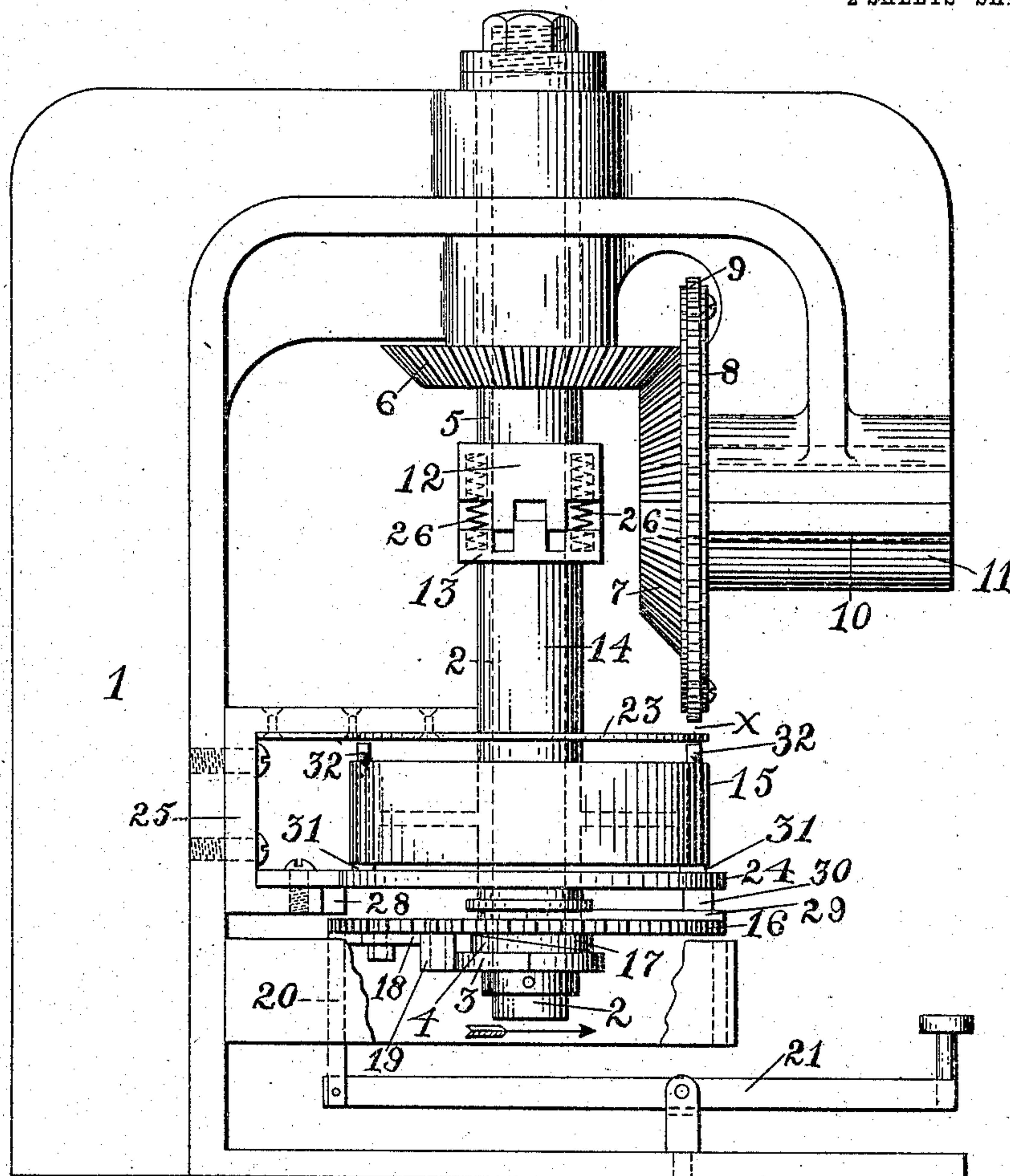


Fig. 1.

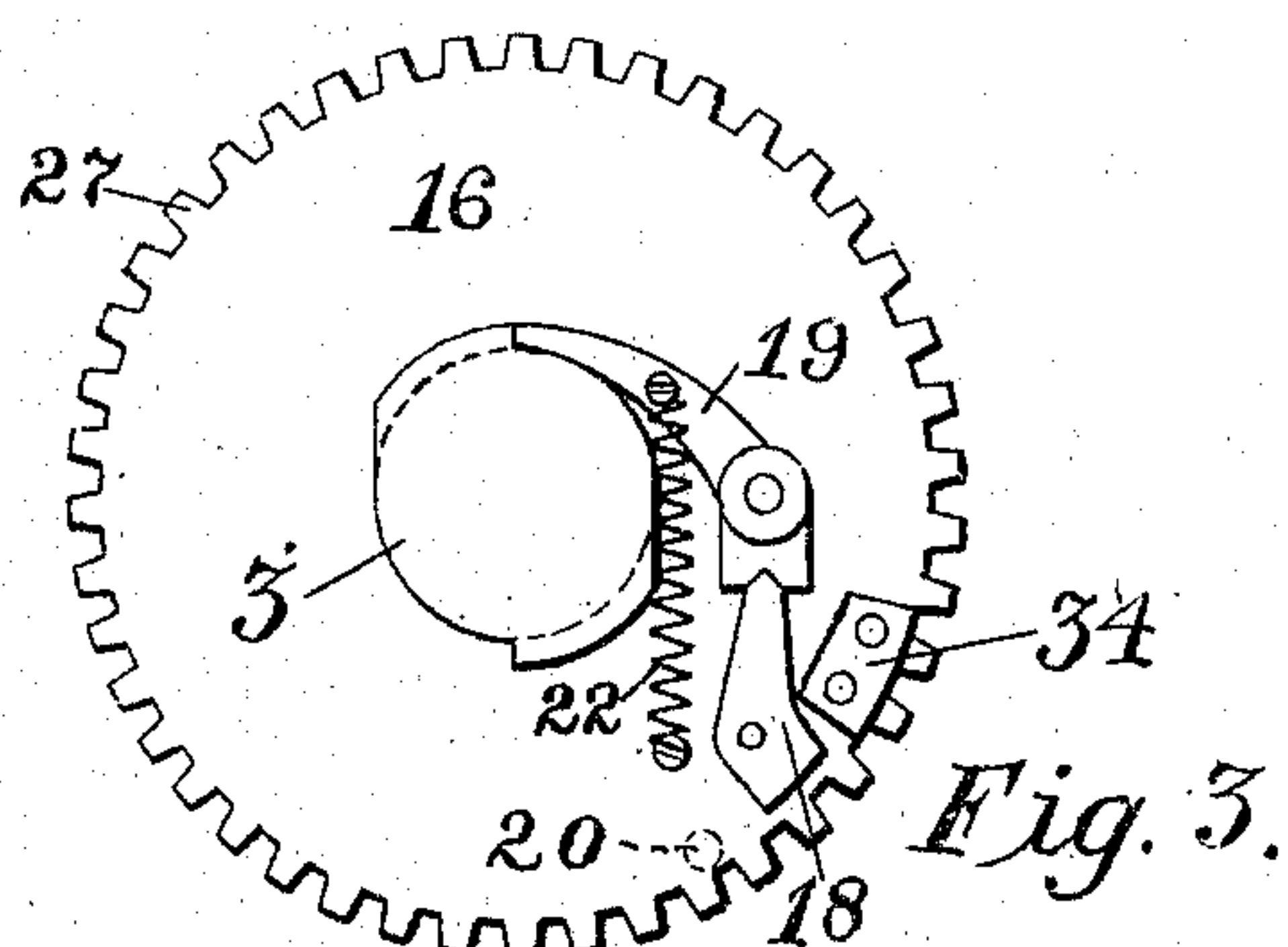
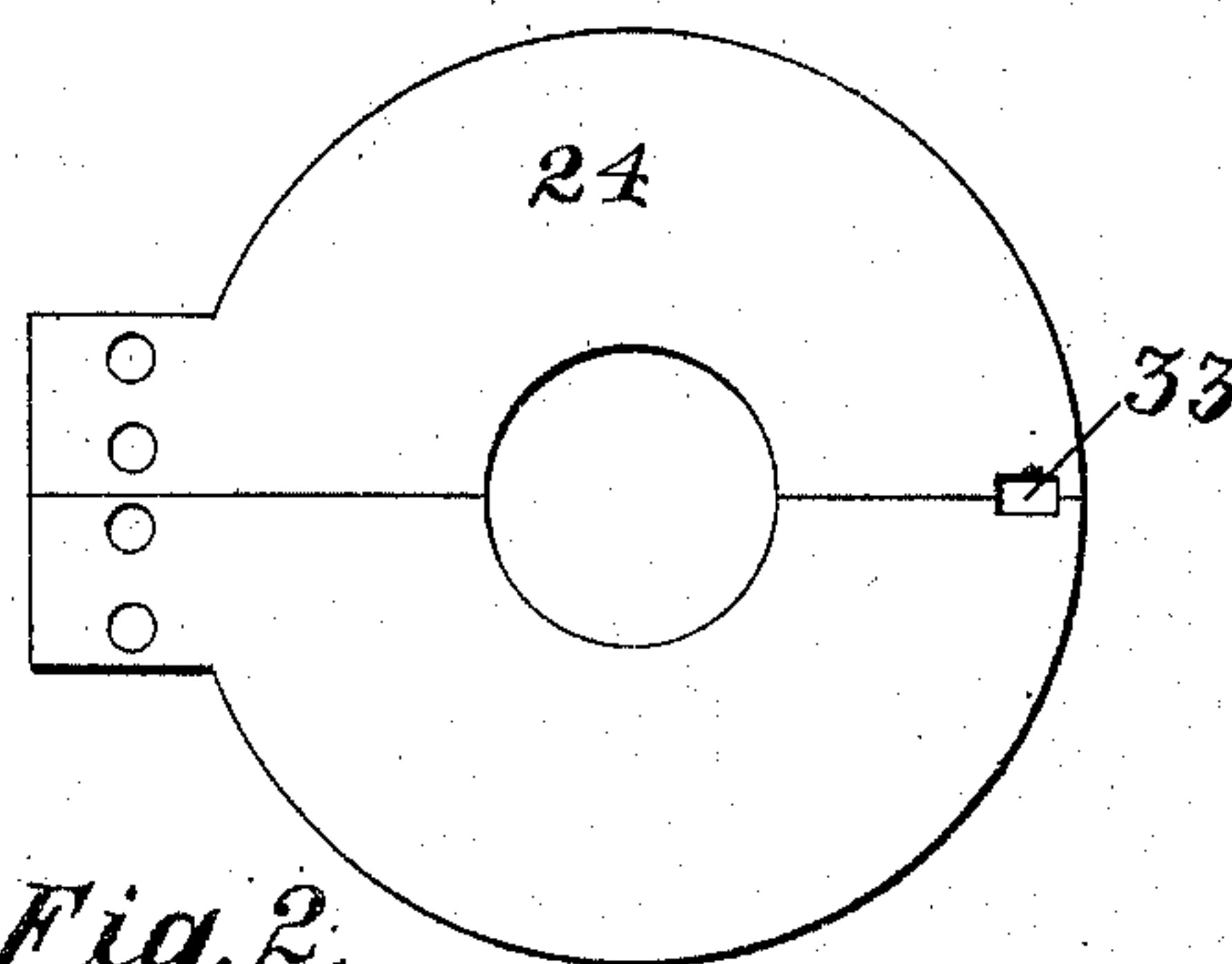


Fig. 2.



Attest:

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EMBOSSING MACHINE.
APPLICATION FILED OCT. 2, 1907.

947,254.

Patented Jan. 25, 1910.

2 SHEETS—SHEET 2.

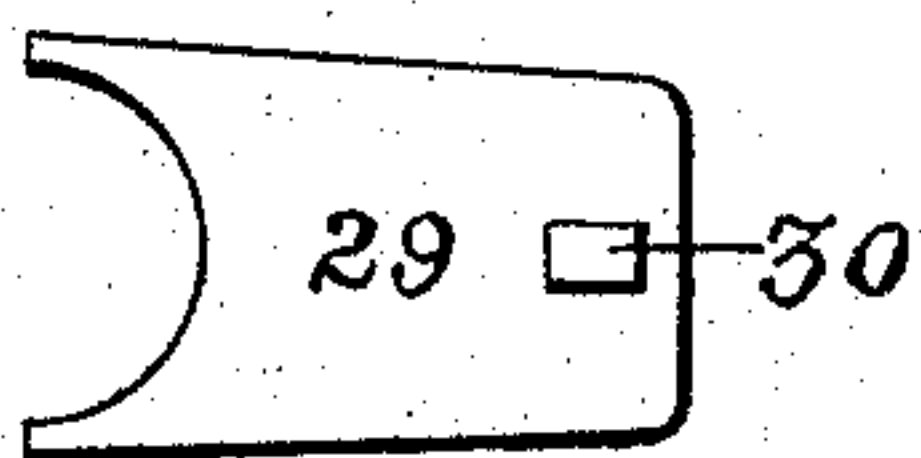


Fig. 4.

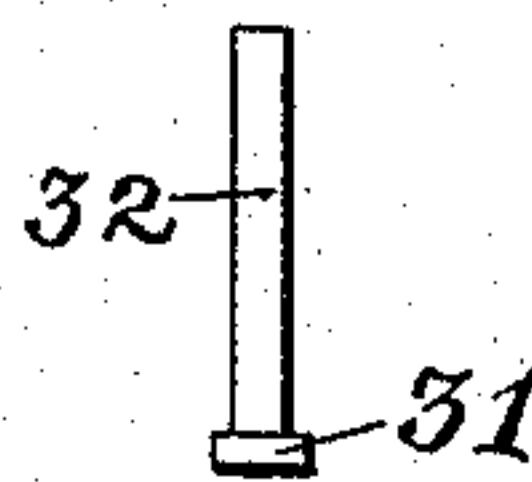


Fig. 5.

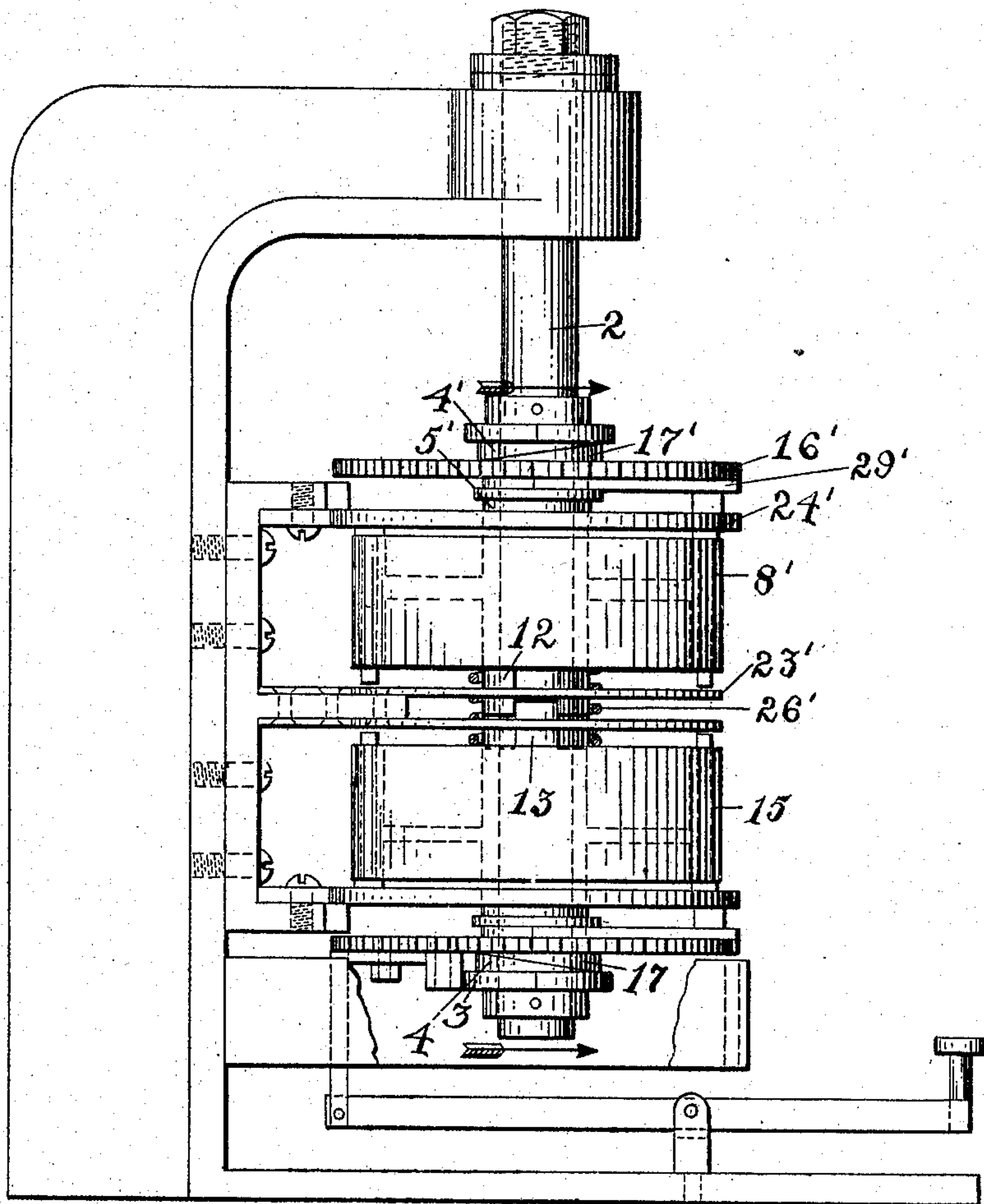


Fig. 6.

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UNITED STATES PATENT OFFICE.

CHARLES OWENS, OF CHATTANOOGA, TENNESSEE, ASSIGNOR TO MONTAGUE MAILING MACHINERY CO., A CORPORATION OF TENNESSEE.

EMBOSSING-MACHINE.

947,254.

Specification of Letters Patent.

Patented Jan. 25, 1910.

Application filed October 2, 1907. Serial No. 395,656.

To all whom it may concern:

Be it known that I, CHARLES OWENS, a citizen of the United States, residing at Chattanooga, Tennessee, have invented certain new and useful Improvements in Embossing-Machines, of which the following is a specification.

It is the object of the invention to provide a simple and effective form of apparatus for embossing metal plates such as are used in addressing machines for printing the addresses upon the articles or magazines to be sent out to subscribers.

In carrying out my invention I employ rotary carriers for the dies with means controlled by keys for stopping the said carriers at the proper position to bring the desired pair of dies to the printing or stamping point, means being also provided whereby the stamping action is immediately effected upon the carriers assuming the position just described.

The invention consists in the features and combination and arrangement of parts hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of a machine embodying my invention. Fig. 2 is a plan view of a detail part of the machine. Fig. 3 is a bottom plan view of a detail portion of the machine. Fig. 4 is a detail plan view of the punch, and Fig. 5 is a detail view of one of the dies. Fig. 6 is a view of a form of my invention in which the die carriers are arranged axially.

In these drawings 1 is the frame of the machine, and 2 is the driving shaft shown in dotted lines and which is constantly driven in any suitable manner. On the lower end of this shaft and rigidly secured thereto is a toothed wheel or ratchet 3 having on its upper side a cam or incline 4.

5 indicates a sleeve carrying a bevel gear 6 which meshes with a bevel gear 7 attached to the carrier 8, which has thereon one set of dies 9, this carrier having its shaft 10 arranged to turn in a bearing 11 of the frame.

The sleeve 5 has toothed clutch member 12 engaging a toothed clutch member 13 carried by a sleeve 14, which sleeve has fixed thereto a die carrier drum 15. This sleeve also has fixed thereto a disk or plate 16 which has on its under side a cam or incline

17 engaging the incline of cam 4 on the ratchet wheel. On the under side of this plate 16 there is pivoted a yielding stop 18 arranged to engage a pawl 19 also pivoted to the under side of the plate 16, the said pawl engaging the ratchet wheel 3, before mentioned, so that normally when no printing is being done the plate or disk 16 together with the sleeve 14; the clutch members; the gears 6 and 7 and the die carrier 8 will be in constant revolution. The yielding stop 18 is adapted to be carried or revolved by the revolution of the plate or disk 16 in a path adjacent a series of stop pins 20, only one of which is shown in the drawings, these stop pins being each controlled by a key-lever 21 extending to a key-board. The function of the clutch members 12, 13, is to transmit the movement of the one sleeve 14 to the other 5 and at the same time to allow the carrier drum 15 and associated parts to have axial movement.

The pawl 19 is pressed toward the ratchet by a spring 22 to engage the same. A pair of plates or disks 23, 24 are attached to a bracket 25 in turn secured to the frame 1 of the machine, these plates extending respectively above and below the die carrier drum 15 and the dies carried thereby. The sleeve 14 together with the die carrier drum is pressed downwardly by means of springs 26 extending between the clutch members and bearing thereon. These springs hold the die or matrix carrier in its inactive or lowest position in which it is adapted to rotate. The impression member or plate 16 for pressing the dies or matrices upwardly has a series of notches in its periphery as shown at 27 Fig. 3. Overlying the edge of this plate is a registering or centering stop or detent 28 which may form part of the fixed bracket 25, the function of this registering device being to enter one of the notches 27 when the rotary motion is arrested and the impression plate or member 16 rises to give the printing or stamping effect, this registering-stop or member holding the lower die carrier and the impression plate accurately in position while the impression is being made. The punch or impression device is shown in detail Fig. 4, consisting of a plate 29 adapted to rest loosely upon the upper face of the impression plate 16 and having its end formed with a notch or curved portion adapted to fit the shaft or sleeve 14

and having also a punch projection 30 adapted to engage the lower end or head 31 of the die stem, which at this moment may be lying above it so that upon the elevation
 5 of the impression plate 16 this punch will force upwardly the die immediately above it and make the impression in the plate fed to the point x in conjunction with the opposite die on the carrier 8, it being understood that the carrier 8 has thereon a male
 10 die while the female dies are formed in the upper ends of the stems 32 which have upon their lower ends the heads 31 above described and it being understood also that in
 15 the present specific embodiment of my invention the dies are loosely mounted in the die carrier 15. The purpose of having the heads 31 on the die stem is to have the carrier 15 move the die which has just been
 20 operated back to its lowermost position.

In Fig. 2 a plan view of the plate 24 is shown, this having an opening at 33 to receive the punch 29. In the operation of the machine it will be understood that the
 25 die carrier 8 and the die carrying drum 15 are normally in rotation. When one of the keys is struck by the operator the corresponding stop pin 20 will be raised into the path of the outer end of the yielding stop
 30 and this stop will be turned on its pivot until it strikes the fixed stop 34 on the plate or disk 16. In this movement the stop 18 throws the pawl 19 out of engagement with the ratchet wheel 3 on the constantly rotating
 35 drive shaft 2, and at the same time the die carriers are arrested in proper position for printing or stamping the character in the sheet metal or other material which is introduced between these carriers at the point
 40 x . Of course the contact of the stop 18 with the key stop 20 determines the exact position at which the rotary movement is arrested and at this moment one of the notches in the disk or plate 16 lies immediately below
 45 the registering stop or wedge 28, the said plate normally clearing this stop by about one-sixteenth of an inch, but as soon as the plate 16 begins to rise the stop 28 engages one of the notches and retains the
 50 plate and carrier in its arrested position. As soon as the pawl 19 has been released and the dies or die carriers brought to a stop the continued rotary movement of the ratchet 3 will cause its cam or incline 4 to
 55 work against the cam or incline 17 and move upwardly the sleeve 14 together with the plate 16, and the impression device or punch so that the die immediately overlying the punch will be raised to make the
 60 impression in conjunction with the male die carried by the carrier 8. A number of important results are effected by this raising movement of the sleeve 14 by means of the cams just described. First the impression
 65 portion of the matrix carrying mechanism

engages, by one of its notches 27, with the toothed or registering wedge 28. Second, the stop pin 20 is relieved from pressure of the stop 18 because said stop by this upward
 70 movement has been raised into a plane above the plane of the end of the key-stop pin 20. Third, the dies are brought together and a character is raised on the metal or other surface. Fourth, as soon as the
 75 stop 18 has reached the limit of its upward movement due to the upward movement of the plate 16 it swings over the end of the stop pin 20 and when the high parts of the cam surfaces 4 and 17 have passed each
 80 other the downward movement of the matrix carrying mechanism, under the action of the springs 26, will cause the under face of the stop 18 to bear on the upper end of the key stop 20 and force the same back into normal position and the parts will then
 85 be ready for another operation by the manipulation of another key, it being understood that the released pawl 19 has now reengaged with the ratchet wheel and the carriers are again in rotation.

It will be observed that one set of dies, namely, those marked 9 are rigidly mounted on one of the carriers while the other set of dies are loosely mounted in their carrier or
 95 drum and are adapted to have vertical sliding movement in relation thereto. These dies are arranged between the plates 23, 24, and only that die which is immediately above the punch 29 and opposite its coacting
 100 die on the carrier 8 will be operated when the upward movement of the parts takes place. For it will be observed that all the other dies are confined closely between the said plates 23, 24, the said plate 23 having an opening similar to that in plate 24,
 105 that is only at or adjacent the printing point for the passage through it of the die to be elevated. It will be clear that the die carriers are connected to rotate in unison and bring mating dies opposite each other.
 110 From what has just been said it will be also observed that the matrix carrying drum 15 will slide vertically on all of the dies which are held between the plates 23, 24, excepting the die being operated and this one travels
 115 vertically with the said drum under the action of the punch 29. The die carriers are arranged at right angles to each other, all of the dies excepting the one being operated upon remains in the same plane between the
 120 plates 23, 24.

The springs 26 serve to retract the entire matrix carrying mechanism instead of having individual springs on each of the dies. I do not limit myself in this respect, how-
 125 ever, as the individual springs might be used. The springs 26 also effect the return of the key stop pins 20 individually to normal position through the action of the stop
 130 18 which as above stated swings over the op-

erated stop pin when the plate 16 is raised. The head or shoulder on the lower end of the dies insures the return of the operated die to its lowermost position.

5 In Fig. 6 I show a form of my invention in which the die carriers are arranged in co-axial relation. The drum shaft 2 is arranged as before together with the die carrier 15, the toothed wheel 3, the cams or
10 inclines 4 and 17, and the pawl and associated parts including the key operated stop whereby the rotary motion is arrested and the closing, embossing or printing motion given. The die carrier 8' however, instead
15 of being placed at right angles to the die carrier 15 is placed axially in line therewith being carried by a sleeve 5' surrounding the shaft 2 and having the clutch member 12 thereon similar in function to that before
20 described, said clutch member engaging with the clutch member 13 and thus forming a direct connection between the die carriers and avoiding the use of the bevel gears described in connection with the form of the
25 invention first described. The die carrier 8' is associated with plates 23' 24' and with a disk or impression plate 16' and a punch 29', all of these being similar to those parts used in connection with the die carrier 15.
30 The plate 16' also has a cam surface or incline 17' thereon upon which works a cam 4' fixed to the shaft 2. The die carriers are pressed normally apart by a spring 26' surrounding the sleeves and the clutch connections. Now when the rotary motion of the
35 die carriers is arrested by striking a key and throwing one of the stop pins into action both the dies will be arrested because the lower die is connected through the interlocking clutch jaws with the upper die
40 carrier, and as soon as these die carriers have been arrested the power will be exerted through both sets of cams to force the die punches toward each other by means of the impression plates or disks 16, 16' and the
45 dies which are in line with the printing point will be forced together to make the impression, and all the other operations above described concerning the return of the parts to normal position and the resumption of
50 rotary movement of the die carriers will be performed.

Where, in the appended claims, I refer to the dies moving parallel with the axis of rotation or to the axial movement of the dies,
55 it will be understood that I do so generically to apply to both forms of the invention above described, whether the die carriers be arranged coaxially or with their axes at
60 right angles as first described; whether both dies or their carriers have such movement or whether the dies have movement independently of the die carrier or not.

Where I employ the term "closing" in
65 connection with the dies or die carriers, I

do so in a generic sense whether both dies or both carriers are moved or only one die or one carrier is moved toward its coöperating die or carrier.

Any suitable form of holder or carrier 70 may be used to present the material to the dies to be embossed thereby. I do not limit myself to the dies movable in relation to their carrier. In the form first described, where the dies are rigidly arranged on one
75 carrier in case any wear occurs on the bearing surface of the matrices the rigidity of the said dies serves to direct the movable dies centrally and prevents breakage.

I have not specifically claimed herein the 80 modified form of the invention shown in Fig. 6, this however being covered by the broader claims herein and made the subject of specific claims in a co-pending application #446336, filed July 31/08. 85

I claim as my invention:—

1. In combination in a machine of the class described, a pair of rotary die carriers, means for rotating them, means for moving one carrier axially toward and from 90 the other, said carrier having a series of dies individually movable therethrough and having headed ends to be engaged by the die carrier to return the dies to retracted position, substantially as described. 95

2. In combination in a machine of the class described, a pair of rotary die carriers one having its dies movable individually therethrough, a pair of plates rigidly fixed to the frame between which the carrier with 100 its individually movable dies rotates, means for rotating and arresting the die carriers, and means for closing the die at the impression point into connection with a die on the other carrier, said dies being movable in 105 a direction transversely of the plates when said die arrives at the impression point, but being confined by said plates in the rotary movement of the carrier, substantially as described. 110

3. In combination in a machine of the class described, the normally rotating die carriers, one of which is adapted to have axial movement, dies carried by the die carriers and those of the axially movable carrier 115 being arranged with their axes parallel with the axis of said carrier, means for arresting the die carriers and for thereby automatically closing them in making the impression, substantially as described. 120

4. In combination, a pair of rotary die carriers, one of the die carriers having dies arranged with their axes parallel with the axis of the carrier, a continuously rotating member, means connecting the said member 125 with one of the die carriers to rotate the same, said means being adapted to be thrown out of operation, stop means controlled from keys for throwing the connecting means out of operation and thereby ar- 130

resting the movement of the die carrier, and cam means associated and rotating with the constantly rotating member for automatically effecting the closing of the dies to thereby make the impression, said cam means being brought into action by its rotation when the die carrier is arrested, substantially as described.

5. In combination, the two sets of dies with their carriers, means for rotating the same, the dies of one set being arranged with their axes parallel with the axis of rotation, means for arresting the movement of the said die carriers, means for automatically giving the closing movement to make the impression as a result of the arresting of the carriers and an automatic registering device for holding the sets of dies in the position in which they are arrested and while the impression is being taken, said registering device being brought into action by the closing movement of the dies, substantially as described.

6. In combination, a pair of die carriers each having a set of dies, means for rotating the die carriers including a constantly rotating member, the dies of one set having their axes parallel with the axis of its carrier to close with the dies of the other set to make the impression, detachable means connecting the constantly rotating member with one die carrier, stops controlled by keys for operating the detachable connecting means and arresting the rotary movement of the die carrier, cam means associated with the rotary member for automatically effecting the closing of the dies, and registering means engaged by the axial movement of the parts to hold the die carriers in the position in which they have been arrested, substantially as described.

7. In combination the die carriers carrying each a set of dies, a ratchet wheel, a detachable driving connection between the said ratchet wheel and one die carrier, cam surfaces connected respectively with the movable dies and with the ratchet wheel, key-controlled stops adapted to operate the detachable driving connection and to arrest the rotary movement of the carriers and a registering device whereby the carriers are held in their arrested positions, substantially as described.

8. In combination in a machine of the class described, the die carriers, a driving shaft, a constantly rotating driving member on the said shaft, a sleeve on the said shaft carrying one of the die carriers, an impression member also fixed to said sleeve, cam surfaces associated with the sleeve and the constantly rotating shaft respectively, a detachable driving connection between the constantly rotating member and the impression member, key-controlled stops for operating the detachable driving connection and to

arrest the rotary movement of the dies and registering means consisting of notches in the impression member, a registering stop on the frame to engage one of the said notches when the die is moved longitudinally, substantially as described. 70

9. In combination in a machine of the class described, die carriers connected together to move in unison, the dies of one carrier having movement parallel with the axis of rotation, a constantly rotating member, a detachable connection between said constantly rotating member and the die carrier, said connection comprising a swinging member, key-operated stops to engage said swinging member to thereby operate the detachable connection and arrest the rotary movement of the carriers, axially moving means for operating the movable dies, the movement of said means allowing the swinging member of the detachable connection to locate itself over the operated stop pin, and means for returning the axially moving means to normal position whereby also the operated stop pin is returned to normal position, substantially as described. 75 80 85 90

10. In combination in a machine of the class described, rotary die carriers carrying each a set of dies, one set being movable axially in making the impression, a constantly rotating member, a detachment connection between the same and the adjustable die carrier comprising a pawl to engage the constantly rotating member and a swinging member to engage and operate the pawl, said parts revolving with the adjustable die carrier, stop pins operated from the keys for engaging the swinging member, a stop for arresting the swinging movement of said member, means for moving the adjustable die carrier axially together with the detachable connection when the die carriers have been arrested whereby the swinging member will locate itself above the operated stop pin and means for returning the adjustable die carrier to normal position, substantially as described. 95 100 105 110

11. In combination, a constantly operating shaft, a sleeve on said shaft, a die carrier on the said sleeve, a second die carrier, a sleeve to which said second die carrier is connected, said sleeve also being on the driving shaft, a clutch between the two sleeves arranged to allow longitudinal movement of one sleeve with its die carrier in relation to the other sleeve and spring means at the clutch for returning the longitudinally movable die carrier to normal position, substantially as described. 115 120

12. In combination in a machine of the class described, a pair of die carriers, one of which has closing movement in relation to the other axially of its shaft, a series of dies carried in the said adjustable die carrier, plates above and below the said dies and be- 125 130

tween which the adjustable die carrier operates, an impression punch located at one point and passing through the lower plate for operating the dies as brought thereto by the rotary movement of the adjustable die carrier and means for operating the said punch, substantially as described.

13. In combination with a die carrier, a second die carrier, means for rotating the die carrier, the said second die carrier having movement axially and carrying a series of dies loosely therein, upper and lower plates between which the dies are carried, an impression plate rotating with the die carrier and a punch operated by the said impression plate when the same moves axially, substantially as described.

14. In combination, a die carrier, a second die carrier cooperating therewith, a series of dies carried thereby loosely and headed at their lower ends, said second die carrier having axial adjustment besides its rotary movement, a sleeve carrying the said second die carrier, a clutch member connected with the said sleeve, a second clutch member connected with the first die carrier and means for returning the adjustable die carrier to normal position, substantially as described.

15. In combination, a die carrier, means for rotating the same, the dies movable on the carrier parallel with the axis of rotation and means for moving the dies in relation to the carrier and for moving the carrier axially, said dies being returned to normal position by the return of the die carrier to normal position, substantially as described.

16. In combination in a machine of the class described, a pair of die carriers, one of which has its dies arranged with their axes parallel with the axis of rotation of said die carrier and the other die carrier being arranged with its axis at right angles to the first die carrier, and means for arresting the rotary movement of the die carriers and effecting the closing of the dies to make the impression.

17. In combination in a machine of the class described, a pair of die carriers, one of which has its dies arranged with their axes parallel with the axis of rotation of said die carrier and the other die carrier being arranged with its axis at right angles to the first die carrier, and means for arresting the rotary movement of the die carriers and effecting the closing of the dies to make the impression, the dies which are arranged with their axes parallel with the axis of rotation having movement parallel with the center about which they rotate as a set, substantially as described.

18. In combination, a series of dies having movement parallel with the axis of rotation, means for moving said dies, a second series of dies arranged as a set with their axis of rotation at right angles to the axis

of the first mentioned series, and bevel gearing between the two series of dies, substantially as described.

19. In combination, a pair of rotary die carriers arranged substantially at right angles to each other, one of said die carriers having its dies arranged parallel with the axis of rotation of the series of dies and said series of dies being movable parallel with the axis of rotation, means for rotating the dies, as a series, and means for arresting the rotation and causing the same to close with the other die carrier, substantially as described.

20. In combination, two series of rotary dies, one of which has closing movement axially means for rotating said dies including a constantly operating shaft, about which one die carrier is mounted, means for arresting the rotary movement of the dies, and the cam surfaces between the constantly operating shaft and the die carrier for giving the dies their closing movement, automatically when arrested, substantially as described.

21. In combination in a machine of the class described, a pair of rotary die carriers, a shaft common to both carriers and by which they are rotated, a sleeve for each die carrier on the shaft, a clutch connection between the sleeves, means whereby the rotary movement of the shaft is imparted to the sleeves and means for arresting the rotary movement and for causing the impression to be made by the dies by the longitudinal movement of one of the sleeves, substantially as described.

22. In combination, a pair of die carriers each having thereon a set of dies, one set being arranged with their axes parallel to the axis of rotation of the said carrier, the closing of the dies being effected by a movement thereof axially, means for arresting the rotary movement of the die carriers including stop pins and keys, means for effecting the closing of the dies, means returning the dies to normal position, the said stop pins being also returned to normal position by the return movement of the dies, substantially as described.

23. In combination, the die carriers carrying each a set of dies, a shaft with which one die carrier is mounted coaxially, said shaft being in rotation, a detachable connection between the said shaft and the die carrier, means for giving the die carrier a movement axially, said means being operated by the rotating shaft, and means for throwing out the detachable connection, arresting the carrier and rendering the means which moves the same axially, effective, substantially as described.

24. In combination, a rotating series of dies arranged with their axes parallel with the axis of rotation cooperating die means, a rotary carrier for said series, means for

rotating the carrier, arresting devices for the carrier, and a constantly rotating shaft a cam fixed thereto, said cam rotating with the carrier and continuing its rotation after the carrier is arrested to effect the die closing movement, substantially as described.

25. In combination, a rotating series of dies arranged with their axes parallel with the axis of rotation cooperating die means, a rotary carrier for said series, means for rotating the carrier, arresting devices for the carrier, a constantly rotating die closing member, and a cooperating member constantly in contact with the constantly rotating member and connected with the carrier and the dies to move or rest therewith, and to transmit the die closing power from the constantly rotating member when it, with the carrier, is arrested in relation to the constantly rotating member, substantially as described.

26. In combination, a rotary series of dies arranged with their axes parallel with the axis of rotation cooperating die means, a rotary carrier for the said series, means for rotating the carrier, arresting devices, a die closing cam member connected with the dies, to move or rest therewith, a second cam member in contact with and cooperating with the first and constantly rotating to impart its die closing power to the dies through the arrested member, substantially as described.

27. In combination, a rotating series of dies arranged with their axes parallel with the axis of rotation cooperating die means, a carrier for the series of dies, means for rotating the carrier, arresting devices, a rotating die closing cam imparting its die closing power directly along its axis of rotation, and means for transmitting said power for effecting the closing of the dies and arranged coaxially with the cam, substantially as described.

28. In combination, a rotating series of dies arranged with their axes parallel with the axis of rotation cooperating die means, a carrier for the series of dies, means for rotating the carrier, arresting devices, a pair of cam members arranged coaxially and having axial separating and closing movement, and means for transmitting the separating movement for effecting the closing of the dies, one of said cam members rotating constantly and the other moving or resting with the dies, substantially as described.

29. In combination, a rotating series of dies arranged with their axes parallel with the axis of rotation cooperating die means, a carrier for the series of dies, means for rotating the carrier, arresting devices, a rotating die closing cam arranged coaxially with the die carrier and imparting its die closing power directly along the axis of rotation of itself and the carrier, and means

for transmitting said power for effecting the die closing and arranged coaxially with the cam and carrier, substantially as described.

30. In combination, a rotating series of dies arranged with their axes parallel with the axis of rotation cooperating die means, a carrier for the series of dies, means for rotating the carrier, arresting devices, a constantly rotating die closing cam arranged coaxially with the die carrier and imparting its die closing power directly along the axis of rotation of itself and the carrier, and means for transmitting said power for effecting the die closing and arranged coaxially with the cam and carrier, substantially as described.

31. In combination a constantly rotating shaft, a die carrier mounted loosely thereon having a series of dies, cooperating die means, means for driving the die carrier from the constantly rotating shaft, arresting devices, a die closing cam fixed to the said constantly rotating shaft and imparting its die closing power directly along the said shaft, and means mounted on the shaft for transmitting the die closing power, substantially as described.

32. In combination a constantly rotating power shaft, a die carrier having a series of dies, cooperating die means, driving means between the shaft and the carrier, arresting devices, a die closing cam on the shaft, a cooperating cam member also on the shaft having separating and closing movement in respect thereto, and means for transmitting the die closing power from said cooperating cam member for effecting the closing of the dies, substantially as described.

33. In combination a carrier having dies, cooperating die means, means for driving and arresting the carrier, a die closing cam coaxially arranged with the die carrier and transmitting its die closing power axially, a punch held at one point in respect to the rotary carrier, and power transmitting means between the said die closing cam and the dies and encircling the axis of the carrier and die closing cam, substantially as described.

34. In combination a carrier having dies, cooperating die means, means for driving and arresting the carrier, a die closing cam coaxially arranged with the die carrier and transmitting its die closing power axially, a punch held at one point in respect to the rotary carrier, and power transmitting means between the said die closing cam and the dies, and encircling the axis of the carrier and die closing cam, and consisting of a circular plate engaging the punch, substantially as described.

35. In combination a rotary die carrier having a series of dies movable parallel with the axis of the carrier, driving means, arrest-

ing means, a punch, an impression plate coaxial with the die carrier, and means for operating the impression plate axially to operate the die closing punch, substantially as described.

36. In combination a rotary die carrier having a series of dies movable parallel with the axis of the carrier, driving means, arresting means, a punch, an impression plate coaxial with the die carrier, means for operating the impression plate axially to operate the die closing punch, and registering means for engaging the impression plate, substantially as described.

37. In combination a rotary and axially movable die carrier having a series of dies arranged with their axes parallel with the axis of rotation, cooperating die means, driving means for the die carrier, and means for arresting the die carrier and means for giving the same its axial movement as a result of said arresting action, substantially as described.

38. In combination a rotary and axially movable die carrier having a series of dies arranged with their axes parallel with the axis of rotation, cooperating die means, driving means for the die carrier, means for arresting the die carrier and means for giving the same its axial movement as a result of said arresting action, said means consisting of a coaxial cam having its power transmitting surface directed axially, substantially as described.

39. In combination a rotary and axially movable die carrier having a series of dies arranged with their axes parallel with the axis of rotation, cooperating die means, means for arresting the die carrier, and means for giving the same its axial movement as a result of said arresting action, the said dies being loosely mounted in the car-

rier and a punch for operating the dies with means for operating the punch, substantially as described.

40. In combination a rotary carrier having dies with their axes parallel with the axis of rotation, driving means, arresting stop pins, a coacting stop, and means for closing the dies and for thereby removing the coacting stop from the stop pin, said means consisting of an axially moving impression plate carrying the coacting stop substantially as described.

41. In combination a rotary carrier having dies with their axes parallel with the axis of rotation, driving means, arresting stop pins, a coacting stop connected to and rotating with the carrier, axially movable means for closing the dies said means carrying the coacting stop, and registering means rendered effective as a result of the die closing action, substantially as described.

42. In combination a rotary die carrier having a series of dies arranged with their axes parallel with the axis of rotation of the carrier, cooperating die means, a coaxially arranged die closing cam transmitting its die closing power axially, a punch, a coaxial impression plate having a portion coacting with the die closing cam, and movable axially to transmit the die closing power from the coaxial cam to the punch, stop means carried by the plate, a series of stops for engaging the stop means, and registering means for engaging the impression plate, substantially as described.

In testimony whereof, I affix my signature in presence of two witnesses.

CHARLES OWENS.

Witnesses:

ALBERT LAZARD,
E. S. KINCAID.