

No. 717,405.

Patented Dec. 30, 1902.

F. W. HUBBARD.

TIME STAMP.

(Application filed Dec. 13, 1901.)

(No Model.)

Fig. 1.

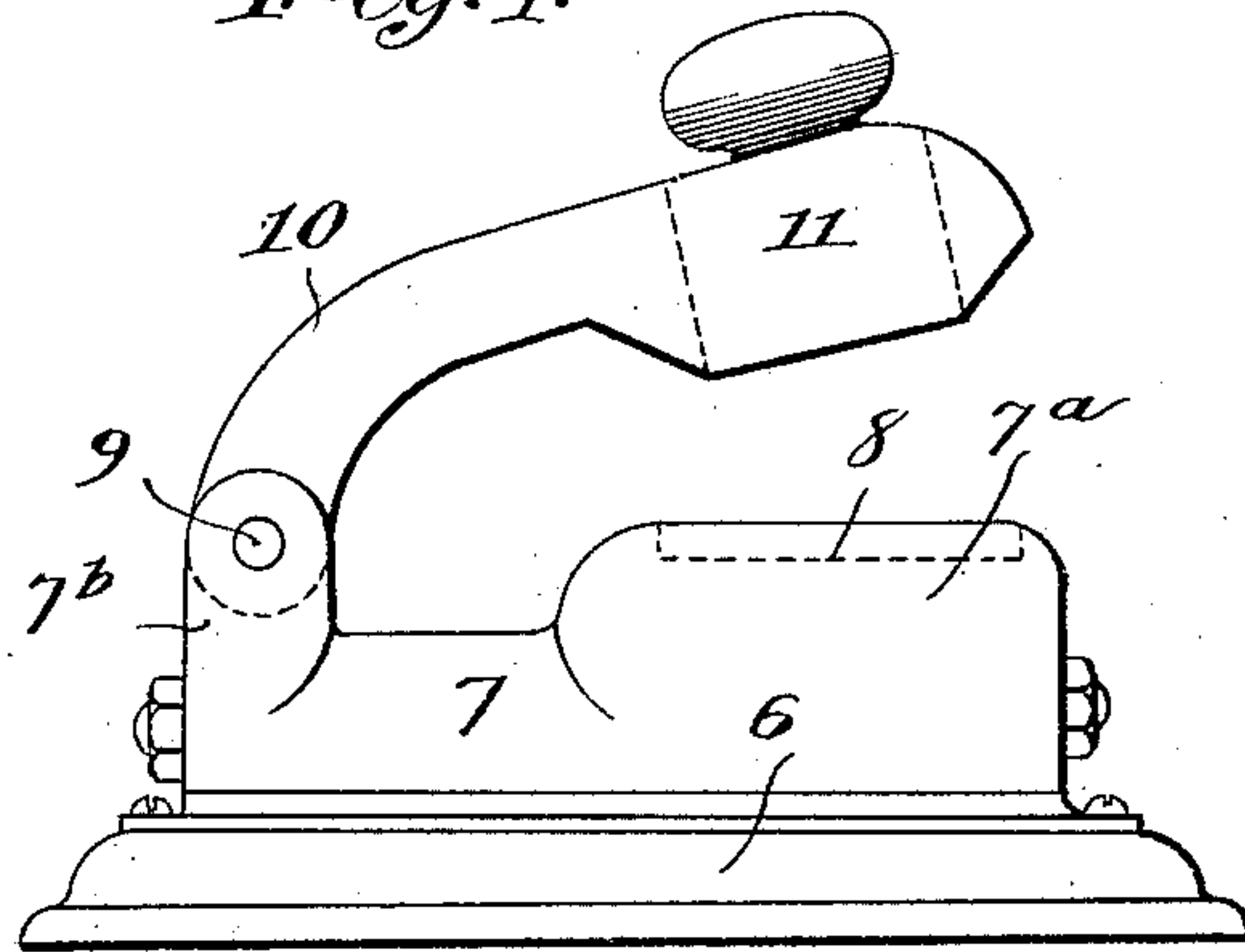


Fig. 2.

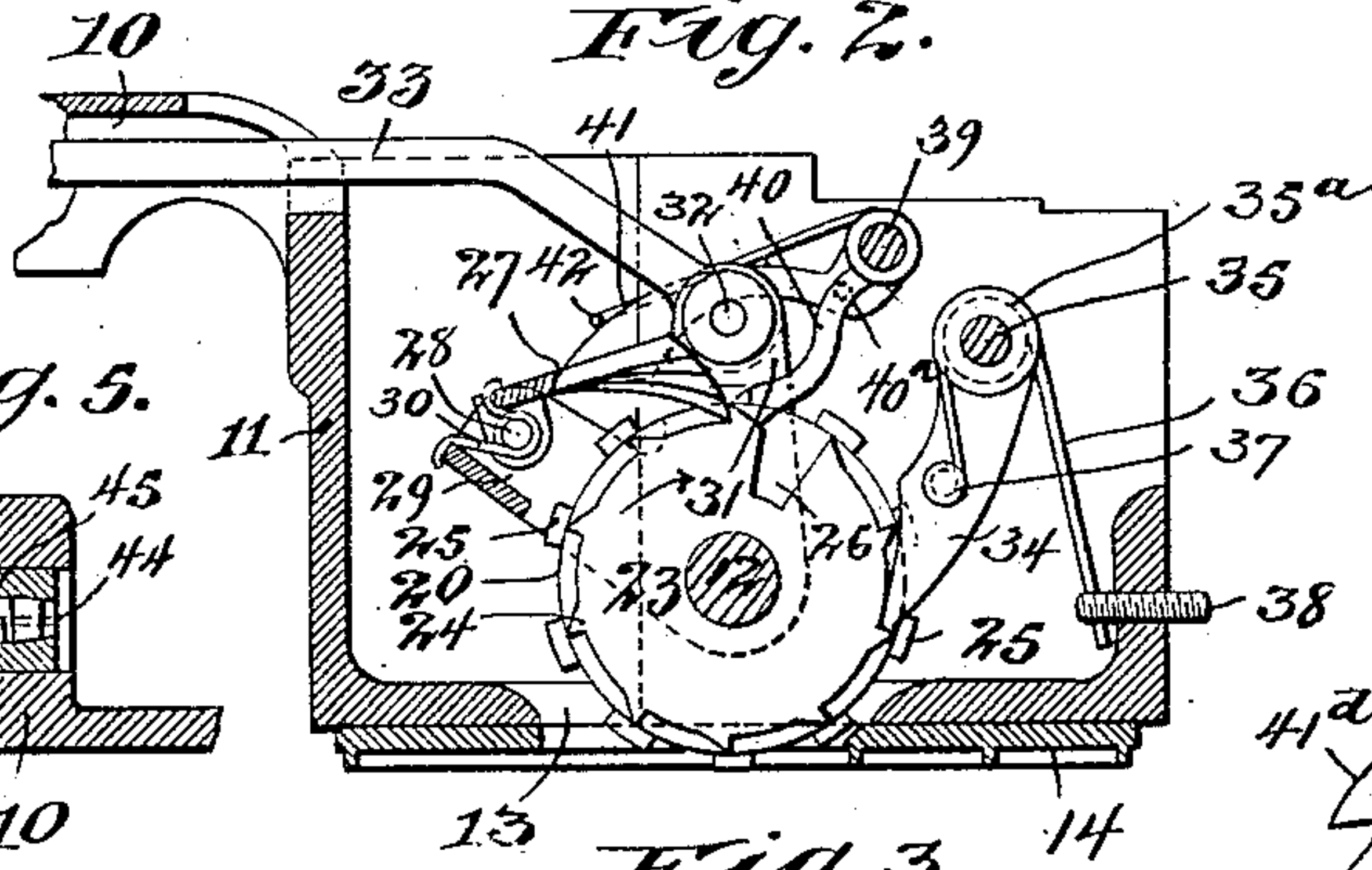


Fig. 5.

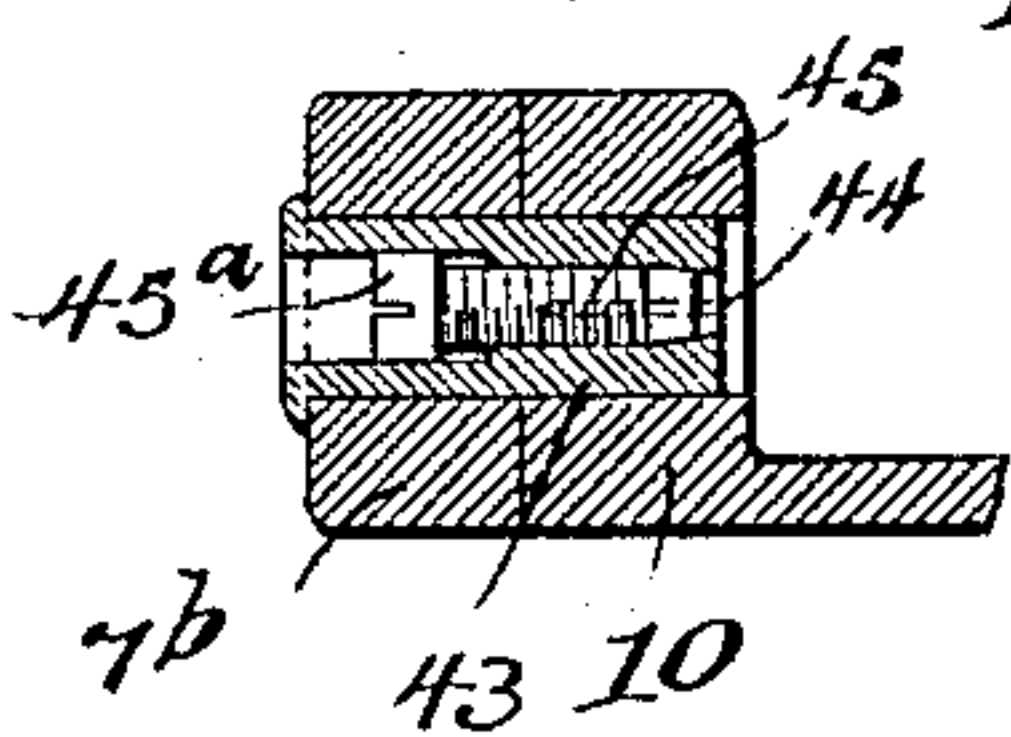


Fig. 4.

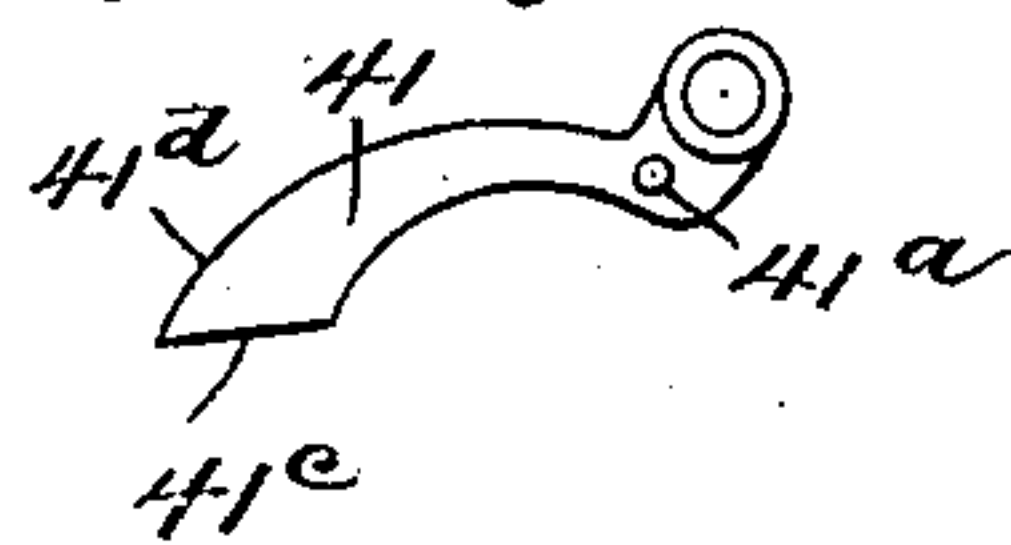
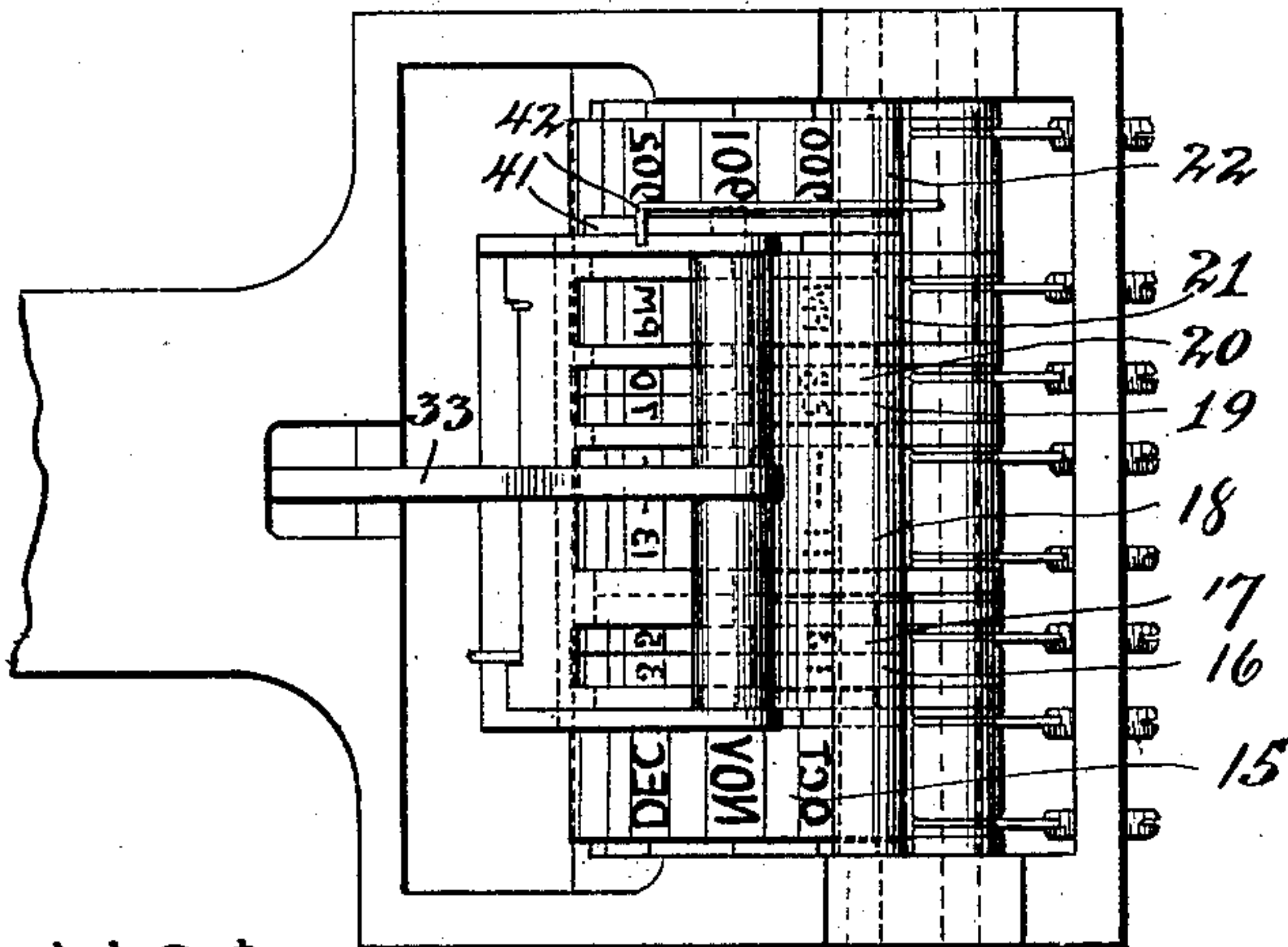


Fig. 3.



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UNITED STATES PATENT OFFICE.

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TIME-STAMP.

SPECIFICATION forming part of Letters Patent No. 717,405, dated December 30, 1902.

Application filed December 13, 1901. Serial No. 85,778. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. HUBBARD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Time-Stamp, of which the following is a specification.

My invention relates to that class of devices known as "time-stamps," wherein the type constituting the immediate recording element of the stamp proper are carried on the periphery of a series of disks rotatably mounted side by side on a common shaft, these disks being advanced in properly-timed relation to each other by pawl-and-ratchet actuating mechanism, which actuating mechanism is in turn operated from an electric clock, so as to insure that the time-record of the stamp shall faithfully indicate the exact time at which the stamp was applied. In view of the fact that these devices in practical use are frequently operated with considerable rapidity and with the application of considerable force to the movable carriage of the stamp it has heretofore been found somewhat difficult to insure against the overrunning of the type-carrying disks, with the result of a defective record.

The primary object of my present invention, therefore, has been to provide an improved detent mechanism which shall operate each time when one or more of the disks is moved to lock said disk or disks in the new position against any possibility of rotation in either direction under or beyond the exact point to which they are intended to be moved for the printing operation.

Another object of my invention is to provide an improved adjustment for the springs that hold one series of pawls or dogs in engagement with the periphery of the ratchet-disks which accompany the respective record-disks.

To these several ends my invention consists in the improved devices and combinations of devices in the mechanism of a time-stamp, substantially as hereinafter described, and more particularly pointed out in the claims.

In the accompanying drawings, which illustrate a preferred embodiment of my invention, Figure 1 is a side elevation of the time-

stamp, the pivoted type-carriage being shown in its elevated position. Fig. 2 is a vertical sectional detail of the box carrying the type-disks and their actuating and controlling mechanism. Fig. 3 is a top plan view of the parts shown in Fig. 2. Fig. 4 is a detail in side elevation of the segment-arm through the actuation of which in one direction one series of detents is released, and Fig. 5 is a horizontal sectional detail through one of the journals or trunnion-pins supporting the arm of the type-carriage.

Referring to the drawings in detail, 6 designates the bed or base of the stamp, integral with which or applied thereto is a casing 7, containing within and beneath itself the usual electromagnet and its armature, together with the usual retractile spring for actuating the armature in opposition to its actuation by the magnet. This casing 7 at one end thereof is somewhat elevated, as shown at 7^a, to form a seat for the usual elastic impression-pad, (indicated by dotted lines at 8,) while the opposite end of the casing has a pair of upstanding ears or lugs 7^b, which carry the trunnion-pins 9, supporting the lower end of the curved type-carrier arm 10, this latter having connected to or formed integral with its forward end a substantially rectangular box or casing 11, carrying the type-disks and their actuating and restraining devices.

Transversely of the box 11 is mounted a shaft 12, the latter being secured in the opposite side walls of the box near their lower ends and over a slot or opening 13, formed in the bottom wall of the box, and in an electrottype or similar plate 14, secured to the bottom of the box. On this shaft 12 are rotatably mounted a series of type-carrying disks. The precise number and function of these individual disks is entirely immaterial so far as my invention is concerned, but for convenience of illustration I have herein shown a group of eight disks assembled on the shaft 12 side by side in the following order: At one end is a disk 15, indicating the months; a disk 16, indicating the tens of the days; a disk 17, indicating the units of the days; a disk 18, indicating the hours; a disk 19, indicating the tens of the minutes; a disk 20, indicating the units of the minutes; a disk 21, indicating the

"A. M." and "P. M." divisions of the day, and, finally, a disk 22 at the opposite end of the shaft, indicating the years, all arranged in close juxtaposition in the order named. On one face of each disk of the series is a ratchet-disk, through which the type-disk is actuated and controlled.

Fig. 2 shows the units minute-disk 20, and upon the face thereof appears the ratchet-disk 23, which is typical of the ratchet-disks employed in connection and association with the other disks of the series. This ratchet-disk has a series of teeth 24 equally spaced about its periphery, each tooth corresponding to and lying opposite one of the type-beds 25. The ratchet-disk also has formed therein one or more notches 26, the purpose of which is to permit the actuating-pawl to drop therein low enough to bring the actuating pawl or pawls of one or more of the companion disks into operative engagement therewith for the purpose of advancing one or more of the companion disks having a relatively slower rate of progression.

The several type-carrying disks are positively actuated by means of a rigidly-united brace of actuating-pawls, (indicated at 27,) the heel of these pawls being pivoted upon a transverse pin 28, carried in and between the side arms of a pawl-carriage 29, itself pivotally mounted to oscillate upon the shaft 36, the pawls being normally pressed toward actuating engagement with their respective ratchet-disks by means of a spring 30, coiled on the pin 28 and engaging the heels of the pawls 27. The pawl-carriage in the form herein shown has another pair of side arms, (indicated at 31), the upper ends of which are connected by a rod 32, centrally of which is pivoted the forward depending end of an actuating-link 33, extending backward through the curved arm 10 and suitably connected at its rear end with the actuating mechanism underlying the casing 7.

The mechanism thus far described is old and well-known in substantially the form and arrangement illustrated in time-stamps of this type, and it is in connection with this mechanism that I have devised the improvements constituting the principal features of my present invention, which will now be described. As hereinabove stated, the rapid and forcible depression of the box 11 and the recording mechanism carried thereby has heretofore frequently resulted in a disturbance of position of the type-disks, thereby producing a false record. In accordance with my invention I provide positive locking means for holding the disks locked against turning in either direction at all times except during the practically instantaneous interval through which one or more of the disks is being advanced to a new recording position. In carrying out this provision I employ the usual series of pivoted detents 34, one for each disk, which, as herein shown, are suspended from a transverse pin or rod 35 above

and to one side of the group of disks. As shown in Fig. 2, the noses of these detents are adapted to engage the backs of the ratchet-teeth, by which is meant that side of the tooth which lies in a plane radial or substantially radial to the disk. As the disks are all normally advanced by their respective pawls 27 in the direction indicated by the arrow in Fig. 2, the detents 34 serve to prevent any retrogression, and they are normally held in engagement with the periphery of their respective disks by means of springs 36, these springs being secured at one end to lateral lugs 37 on the sides of the pawls, passing thence up over the rod 35 or a sleeve 35^a, mounted thereon, and at their lower ends entering grooves or slots formed in the inner ends of a series of adjusting-screws 38, passing through the lower front wall of the box 11. This latter forms an effective and convenient spring-adjusting means, since the springs are at all times held firmly in their adjusted position and may be delicately adjusted within the limits of a half-turn of the screws to vary the pressure of the detents upon their respective disks. Upon another transverse pin or rod 39, extending between the side walls of the box 11, near the upper end thereof, is suspended a rigidly-united brace of dogs 40, the lower ends of which are adapted to engage squarely against the faces of the teeth of the ratchet-disks whenever the recording-disks are in printing position, as clearly illustrated in Fig. 2. As a convenient actuating means for these dogs I prefer to employ a curved segment-arm 41, mounted loosely on the rod 39, said rod having a laterally-extending pin 41^a disposed adjacent its pivot-bearing, which pin takes into a corresponding hole (indicated by dotted lines in Fig. 2 at 40^a) in the adjacent dog 40, whereby the swinging of the arm 41 will produce a corresponding swing of the brace of dogs, it being understood that the several dogs of the series are all rigidly united at their inner ends. The segment-arm 41 has a concave lower edge 41^b, and the free end of the arm is also somewhat widened and provided with a slightly-concave edge or extremity 41^c. Preferably, also, the upper edge of the arm is rounded or convexed, as shown at 41^d. The two concave edges 41^b and 41^c of the arm are adapted to be slidably engaged by the end of the rod 32 as the pawl-carriage is rocked to and fro by its actuating-link 33. A spring 42, fast upon the shaft 39, overlies the upper edge of the arm 41 and at all times holds the latter in engagement with the rod 32. The operation of this auxiliary detent mechanism and its cooperation with the actuating-pawls 27 and the regular detents 34, whereby it automatically prevents an overthrow of the type-disks, will be readily seen from the foregoing description of its construction and relative disposition. Assuming the parts to be as shown in Fig. 2, as the pawl-carriage 29 is rocked backward to carry the actuating-pawls 27 behind

the next rearmost tooth of the ratchet the engagement of the pin 32 with the concave lower edge 41^b of the actuating-arm will gradually raise the dogs 40 out of contact with the front sides of the ratchet-teeth, this actual disengagement occurring only during the brief interval in which the pin is rounding the point formed by the intersection of the concave lower edges 41^b and 41^c, the dogs dropping back into engagement with the teeth as the pin reaches the limit of its rearward travel. The parts are so constructed and arranged that the full rearward oscillation of the pawl-carriage carries the actuating-pawls some distance behind the next rear line of teeth. Consequently when the actuating-pawls are fully withdrawn the ratchet-disk is still engaged by the dogs and held against overthrow. During the initial part of the return or operative swing of the pawl-carriage the actuating-pawls move up to a position contacting the rear of the ratchet-teeth, and by the time this has occurred the pin 32 is rounding the lower corner of the actuating-arm and has raised the dogs away from the ratchet-disk, so that the continued advance of the actuating-pawls may carry the ratchet-disk with them. No sooner, however, has the pin rounded this corner than the actuating-dogs are permitted to drop into contact with the peripheries of their respective ratchet-disks in advance of the next rear line of teeth, so that by the time the actuating-pawls have reached the forward limit of their operative movement the dogs are squarely abutted by the front portions of the teeth engaged by the pawls. It will thus be seen that the restraining action of the dogs 40 is intermitted only during the practically insignificant and negligible interval in which the pin is rounding the lower corner of the actuating-arm on its to-and-fro movements. Simultaneously with this locking action of the dog 40 the corresponding detent 34 engages the opposite face of another ratchet-tooth on the same disk, thereby preventing any backward oscillation of the disk. By this simultaneous and co-operative action of the dog 40 and detent 34 upon the periphery of each disk as it is advanced the positive locking of the disk rigidly in its new position is insured, and the disk can move neither forward nor backward until the next following oscillation of the pawl-carriage again actuates the segment-arm and raises the dog out of restraining engagement.

It frequently happens that in the use of time-stamps of this character the operator in attempting to position a pad or stack of papers to be stamped between the support and the stamp-box or carriage jams in a pad too thick to be properly handled and the top paper of the pad or stack slidingly contacts the under side of the box or electrotpe-plate, with the result that one or more of the type-disks is struck thereby and disturbed from its true position. My present invention ef-

fectually prevents all danger of error from this source.

In Fig. 5 I have illustrated in sectional detail an improved means I prefer to employ for pivoting the arm or support of the type-carriage in the stationary underlying casing of the stamp. As here shown, the lugs 7^b on either side of the casing and the heel of the support 10, lying between the same, are bored to provide aligned journal-bearings of equal diameter, and in these bearings on either side is inserted a trunnion-pin 43, this pin being axially bored to make a sleeve the inner end of which is longitudinally split, as at 44, for some distance, thereby rendering the latter expandible. The split portion of the sleeve is internally threaded through a portion thereof, its inner end being slightly tapered, as shown, to receive the body and correspondingly-tapered end of a screw 45. The outer end of the sleeve is provided with a bore of a sufficient size to receive the head member 45^a of the screw. The sleeve 43 without the screw 45 therein has a sliding fit in its stationary and oscillating supports 7^b and 10, respectively, such as enables it to be inserted or withdrawn with ease. Once inserted, the screw 45 is then applied and when forced home to its seat spreads the inner split end of the sleeve snugly into contact with its seat in the arm 10, thereby keying it to the latter. The outer end of the trunnion-pin, however, is still free to turn in the fixed ear or lug 7^b, which latter thus becomes a journal-bearing, with the engaging outer half of the trunnion-pin as a journal. The simple withdrawal of the screw 45 releases the clamping of the sleeve within its support 10 and permits the sleeve to be withdrawn and the parts thus separated.

From the foregoing it will be seen that by my present invention I have provided an improved mechanism for governing the advance of the type-disks and preventing their overthrow, and I have also provided a novel and reliable means for maintaining and adjusting the pressure applied to retain in engagement with the ratchet-disks the detents which prevent accidental retrogression of the type-disks.

It will be evident that the particular mechanical forms in which I have embodied my present improvements may be modified and varied to some extent by the employment of mechanical equivalents without departing from the spirit of my invention. I desire it to be understood, therefore, that the embodiment of my invention herein illustrated and described is typical only, except to the extent that the particular mechanism shown may be made the subject of claims specifically directed thereto.

I claim—

1. In a time-stamp, the combination with a containing box or casing, of a transverse shaft therein, a type-disk rotatably mounted on said shaft, a ratchet-disk fast with said type-disk, a pawl-carriage pivotally mounted on

said shaft, an actuating-pawl pivotally mounted in said pawl-carriage, a spring-pressed detent for preventing retrogression of the disks, a pivot-rod mounted to one side of said disks, 5 a dog pivoted on said rod and adapted to engage the ratchet-disk in a manner to prevent overthrow of the latter, an actuating-arm for said dog, and means simultaneously actuating the pawl-carriage and engaging the dog- 10 actuating arm in such a manner as to effect the withdrawal of the dog upon the retreat of the pawl and permit the return of the dog simultaneously with the advance of the pawl, whereby the type-disk is locked against both 15 overthrow and underthrow, substantially as described.

2. In a time-stamp, the combination with a containing-box having an opening through its bottom wall, of a transverse shaft mounted 20 therein over said opening, a series of type-disks rotatably mounted on said shaft, a corresponding series of ratchet-disks fast with said type-disks, respectively, a pawl-carriage pivotally mounted on said shaft and embracing said disks, a brace of pawls pivotally 25 mounted in said pawl-carriage, a series of spring-pressed detents engaging said ratchet-disks, respectively, to prevent retrogression thereof, a pivot-rod mounted in said box to 30 one side of said disks, a brace of dogs pivoted on said rod and adapted to respectively engage said ratchet-disks in a manner to prevent overthrow of the latter, a segment dog-actuating arm also mounted on said pivot-rod, a 35 spring tending to press said segment-arm in a direction to carry the dogs into engagement with the disks, a projection on the pawl-car-

riage engaging a curved side of the segment-arm, and means for rocking the pawl-carriage on its bearing on the transverse shaft at regularly-timed intervals, the parts being arranged and operating substantially as shown and described. 40

3. In a time-stamp, the combination with a rotatable type-disk and a ratchet-disk fast 45 therewith, of a pivoted detent, a spring connected with the latter and adapted to press the free end of the same into engagement with the ratchet-disk, and a screw-threaded pin for adjusting the tension of the spring and 50 having a slotted extremity adapted to receive the free end of the spring and securely hold the same, substantially as described.

4. In a time-stamp, the combination with a box or casing and a transverse shaft mounted 55 in the opposite side walls thereof, of a rotatable type-disk and a ratchet-disk fast therewith both mounted on said shaft, a pivot-rod mounted in the box to one side of said disks, a detent for the ratchet-disk pivoted on said 60 rod, a bent spring overlying said pivot-rod and at its inner end engaging the detent, and a screw-threaded pin having a slotted inner end passed through the front wall of the box and engaging the outer free end of the 65 spring, and forming a means for both adjusting the tension of the spring and securing the latter in adjusted position, substantially as described.

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