

Nov. 4, 1930.

E. SALUSTRI ET AL

1,780,770

PORTABLE TIME STAMPING MECHANISM

Filed May 31, 1927

5 Sheets-Sheet 1

Fig 1

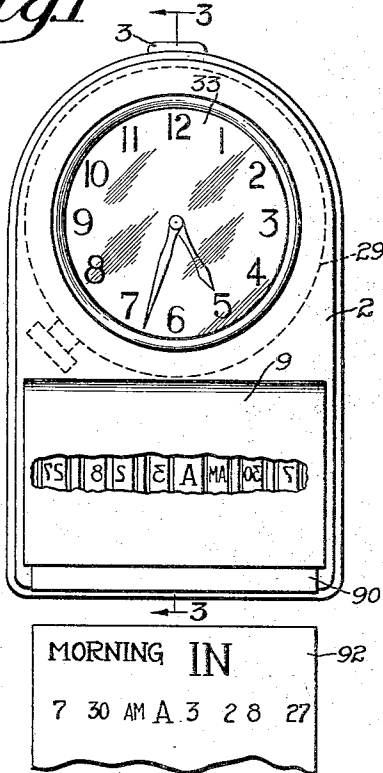


Fig. 2

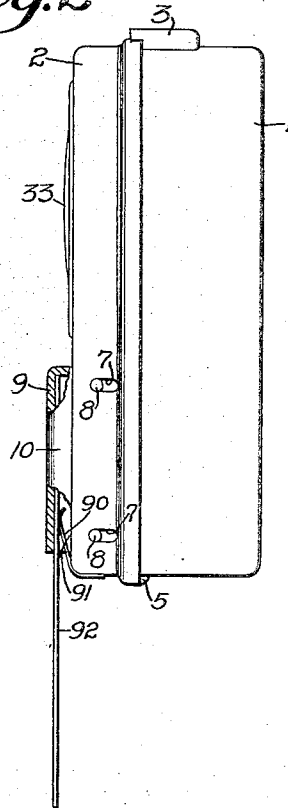
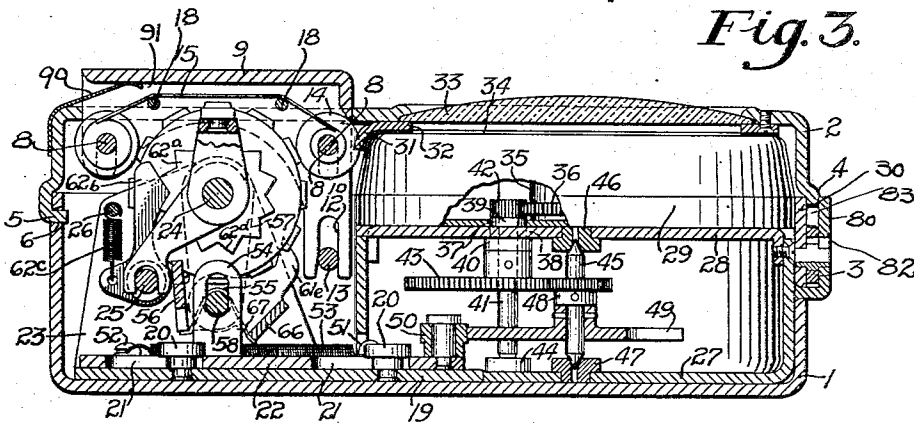


Fig. 3.



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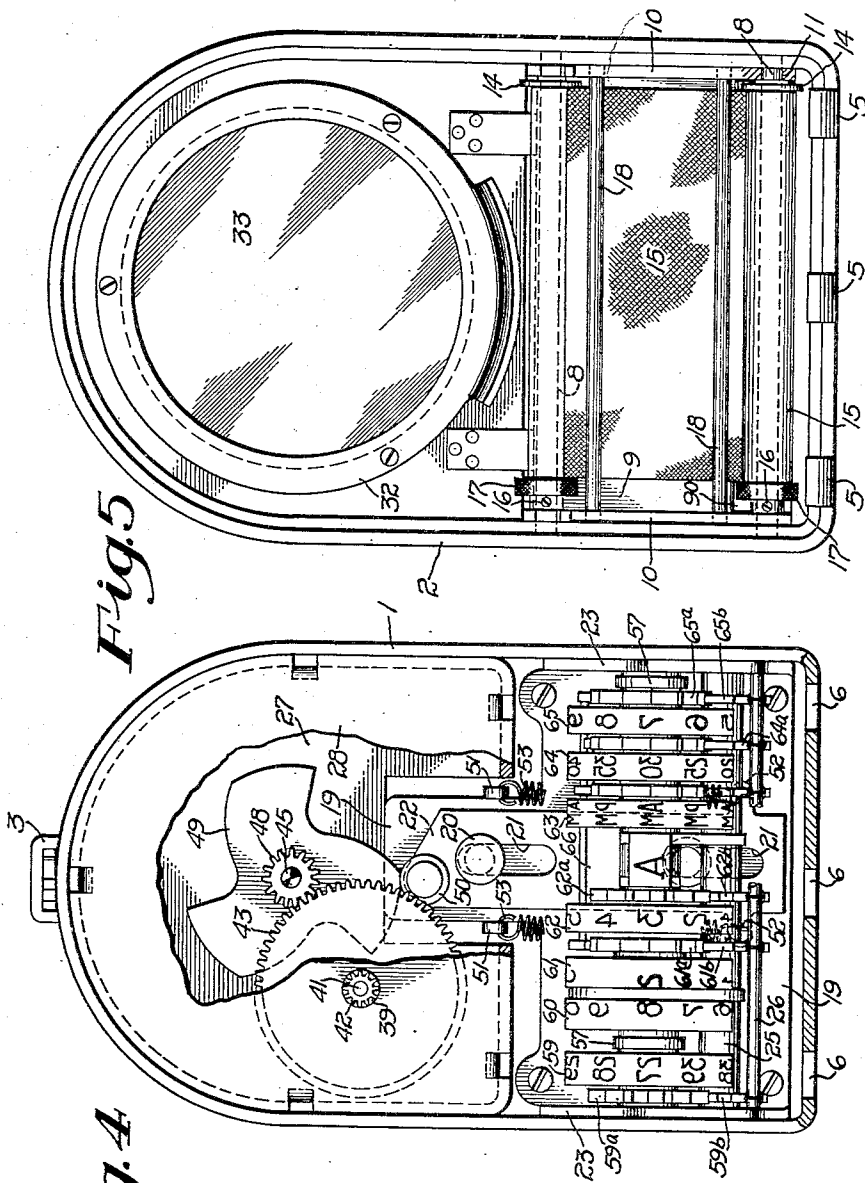
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5 Sheets-Sheet 2



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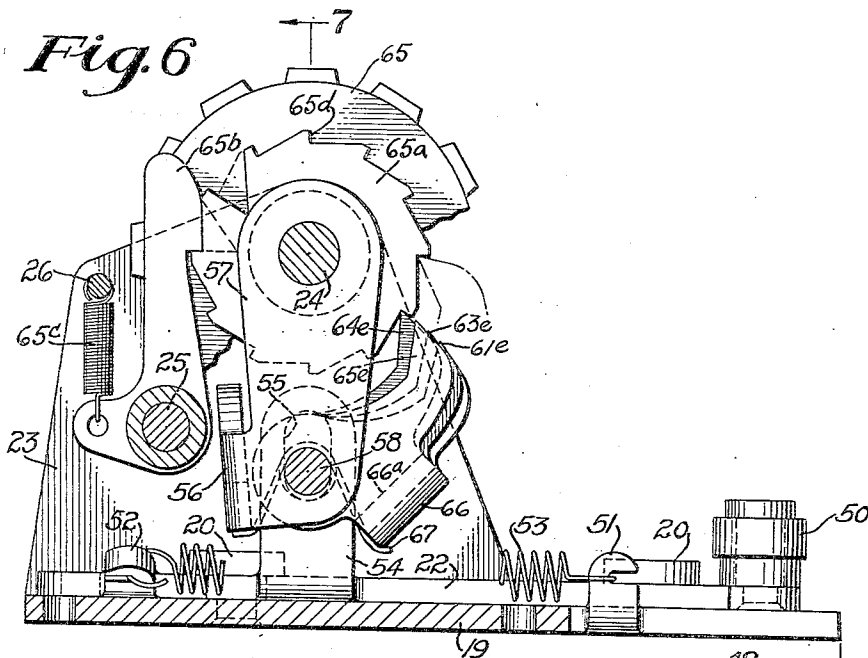
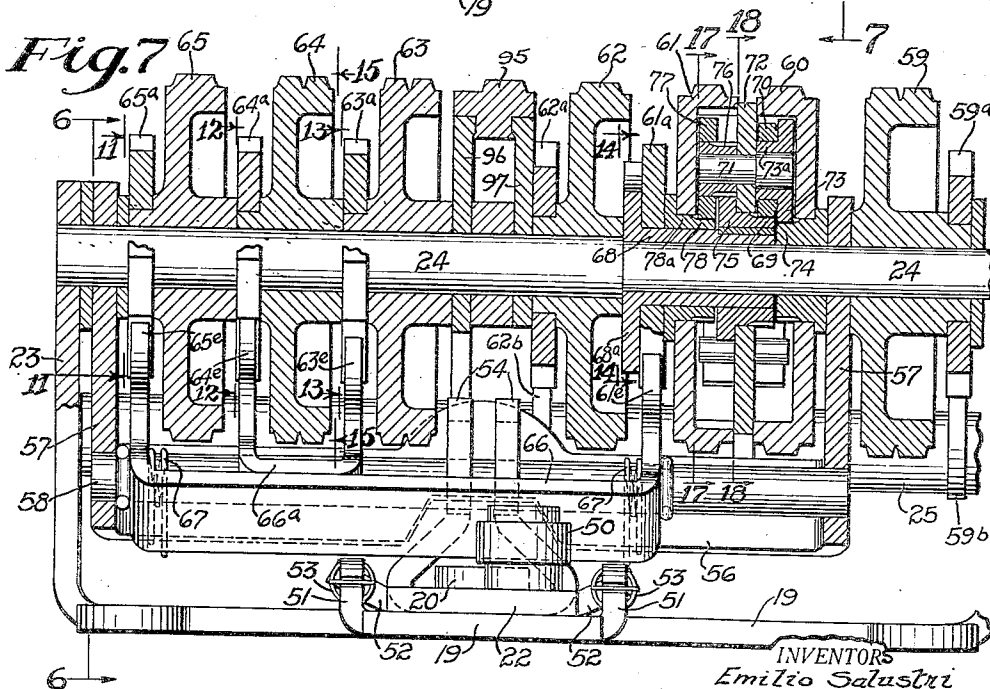
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PORTABLE TIME STAMPING MECHANISM

Filed May 31, 1927

5 Sheets-Sheet 3



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PORTABLE TIME STAMPING MECHANISM

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Fig. 8

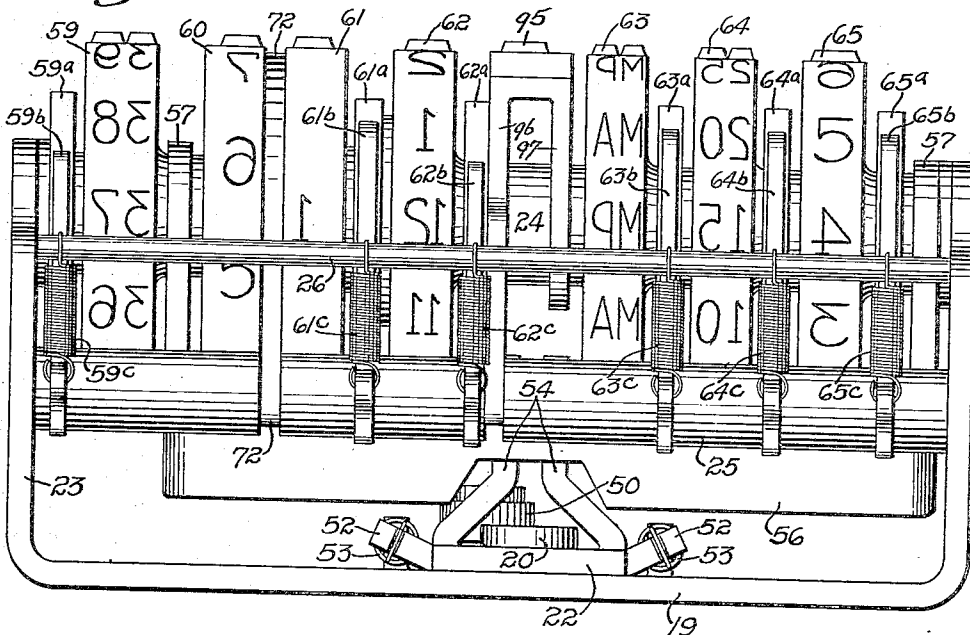


Fig. 9

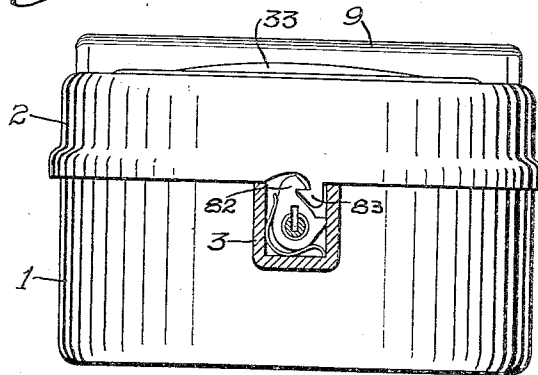
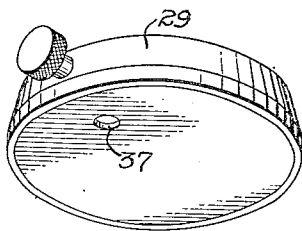


Fig. 10



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PORTABLE TIME STAMPING MECHANISM

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Fig. 11

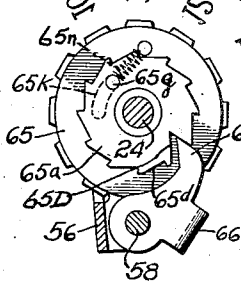


Fig. 12

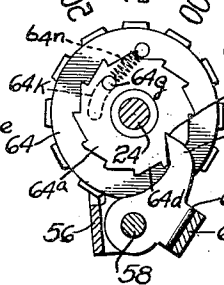


Fig. 13

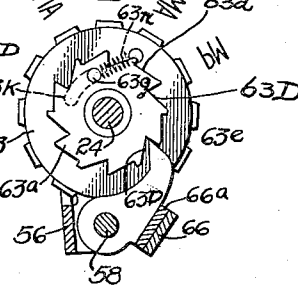


Fig. 14

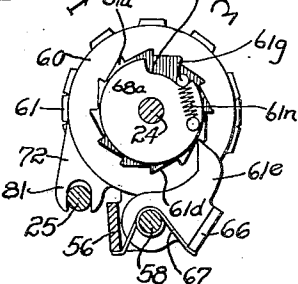


Fig. 15

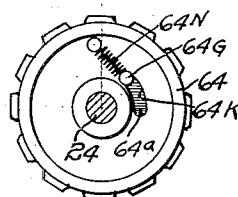


Fig. 16

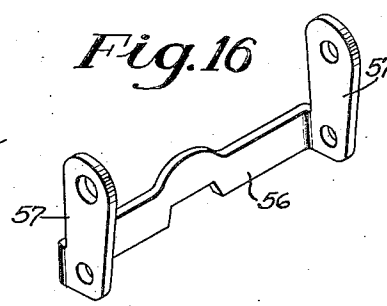


Fig. 17

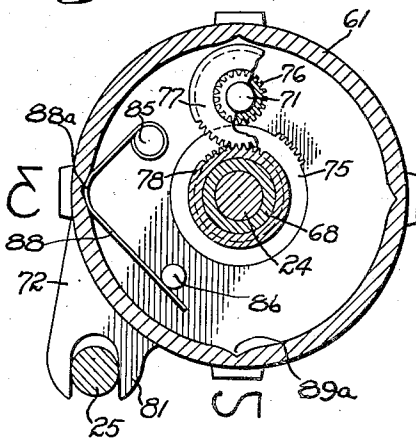
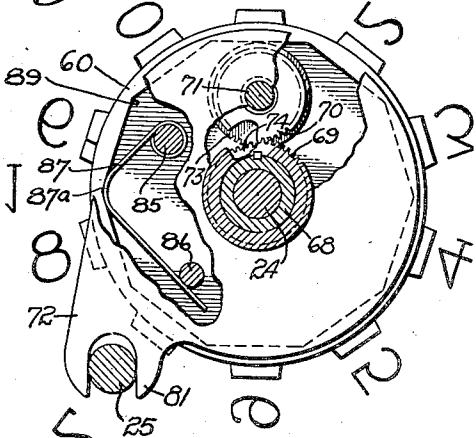


Fig. 18



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UNITED STATES PATENT OFFICE

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PORTABLE TIME-STAMPING MECHANISM

Application filed May 31, 1927. Serial No. 195,286.

This invention relates to improvements in portable time stamping mechanisms, and is primarily intended for the use of timekeepers, foremen and others whose duty it is to check the time of arrival and departure of men employed in places where it is not feasible to provide an ordinary form of time clock.

It is an object of the invention to provide a portable time stamping mechanism consisting of two cooperating units: one, a watch; and two, a housing in which the watch is completely encased so that the latter cannot be wound, set, or in any way tampered with when the former is locked; and further parts in the housing are provided which coact with the watch so that marking rollers in the housing are operated by the watch, and are so placed that time cards may be stamped by the mechanism.

Some of the other objects of the invention are to provide a portable time stamping mechanism: wherein the housing is so constructed that it may easily be opened and closed by anyone possessing a key for the insertion, removal, winding or setting of the watch, or for setting the marking rollers; wherein the housing has a substantially transparent face through which the face of the watch can be clearly seen; wherein the housing has marking rollers so positioned therein that when the former is open the latter may be readily set to synchronize with the watch, or to show the correct day, month, or year; wherein the housing is provided with a depressible portion over the marking rollers so that that portion may be pressed down to bring a time card into contact with the rollers so that a legible record may be made; wherein the housing is provided with means for preventing dirt, grit and foreign matter from accumulating in the slot in the housing intended for the insertion of time cards to be stamped; wherein the housing is provided with means for allowing the marking rollers to remain stationery should the mechanism which turns them move during the instant a time card is being stamped, and means for causing the marking rollers to turn to the positions the mechanism would have moved

them to at the instant that pressure of the time card against the marking rollers is released; and wherein the housing is provided internally with supporting means for holding the watch so that the latter and the part of the mechanism in the housing which coacts with it will continue to function together irrespective of the position of the housing.

A further object of the invention is to provide a portable time stamping mechanism including a watch wherein normal working parts are operated in a normal manner; and wherein the watch case is provided with an opening therethrough for a dowel sleeve through which a shaft extends that carries a pinion which cooperates with a gear in the watch, and preferably with a gear therein that is ordinarily utilized for the normal operation of the watch.

Having thus briefly outlined the major objects of the invention we will now proceed to describe an embodiment thereof with the aid of the accompanying drawings, in which:

Figure 1 illustrates a front elevation of the invention, and

Figure 2 a side elevation, partly in section, showing a time card in position to be punched.

Figure 3 is an enlarged section on the line 3—3 of Figure 1.

Figures 4 and 5 show the interior of the two housing portions when detached.

Figure 6 is a section on the line 6—6 of Figure 7, and

Figure 7 is a section on the line 7—7 of Figure 6.

Figure 8 is an end view of the guide plate, the marking rollers supported by it, and part of the cooperating mechanism.

Figure 9 is an end view of the housing showing one form of locking mechanism, the latter being shown in section.

Figure 10 is a perspective view of a watch.

Figures 11, 12, 13, 14 and 15 are reduced sections on the lines 11—11, 12—12, 13—13, 14—14 and 15—15 of Figure 7.

Figure 16 is a perspective view of the yoke, also reduced.

Figures 17 and 18 are sections on the lines 17—17 and 18—18 of Figure 7.

Referring to the drawings, 1 and 2 design-

nate two portions of a housing adapted to be held together as by the locking member 3, and are so connected at their ends remote from the locking member that when the latter is released the housing portion 2 may be swung outwards from the portion 1, and the hook 5 on the former detached from the opening 6 in the latter. Moreover the hook and opening are so arranged that no dirt or foreign matter can enter when they are in engaging position. Other means for pivotally connecting the housing portions may, however, be employed when desired. The locking member 3, secured to the housing portion 1, is provided with a portion 80 which is adapted to overlap the margin 4 of the housing portion 2. The latter margin has a lug 83 thereon which, when the lock is in engaging position, is held by a spring actuated dog 82 in the lock. Other types of locks may however be utilized.

Through slots 7 in the sides of the housing portion 2 spindles 8 are arranged which extend the full width of the housing. 9 designates a depressible plate through the inturned sides 10 of which circular openings 11 are provided for the said spindles 8; this depressible plate is normally held in outward position by a spring 90 secured to the housing portion 2. The inturned sides of the plate are usually slotted at 12 so that they may move on guide pins 13 in the sides of the housing portion 1 and be entirely removed from the said pins when the housing portion 2 is swung away from the portion 1. On the spindles 8 spools 14 are arranged which extend substantially the full distance between the inturned sides 10 and carry the inking ribbon 15. These spools are usually secured to the spindles as by screws 16 so that the spindles are held against axial movement, and each spool is generally provided with a knurled collar 17 to facilitate turning the rollers to expose unused portions of the inking ribbon. 18 designates guides secured to and extending between the inturned sides 10 of the depressible plate to support the ribbon between the spools. The spring 90 also prevents dirt and other foreign matter entering the opening 91, but must be sufficiently weak that one end of a time card 92 may be inserted into the said opening.

In the lower part of the housing portion 1 a guide plate 19 is secured. The latter has guide pins 20 therein which pass through slots 21 in the slide 22 so that the latter is free to move longitudinally on the said plate. The sides 23 of the plate 19 are upturned and support the ends of the main shaft 24, the dog shaft 25 and the rod 26. In the upper part of the housing portion 1 an inner frame 27 is arranged which may be spot welded in position, to this inner frame a longitudinal supporting plate 28 is attached against which the back of the watch case 29 rests. The up-

per side of the watch case bears on the front part 30 of the housing portion 1, the lower side of the watch case is supported by a receiving flange 31 integral with the housing portion 2, and an annular plate 32 attached to the latter housing portion, which holds a substantially transparent disc 33 in position, bears against the front of the watch case around its face 34.

The watch may be of a conventional construction, but is preferably provided with a somewhat stronger spring (not shown) in order that it may operate the special mechanism herein described as well as the ordinary watch parts. The usual spring barrel 35 has an ordinary external gear 36 thereon by which the watch is operated. Through the back of the watch case is an opening 37 which registers with an opening 38 through the supporting plate 28. A dowel sleeve 39 passes through the openings 37 and 38 and has a collar 40 thereon which rests against the side of the supporting plate remote from the watch case. A spindle 41 extends through the dowel sleeve and has a pinion 42 thereon which meshes with the external gear 36. Intermediately of its length the spindle 41 carries a gear 43 and its end remote from the watch case is supported in a bearing 44 which is mounted in the inner frame 27.

A second shaft 45, supported in bearings 46 and 47 mounted in the longitudinal supporting plate 28 and in the inner frame 27 respectively, has a pinion 48 thereon which meshes with the gear 43, and also a cam 49. It will be remembered that usually spring barrels of watches only rotate once every few hours. The arrangement of gearing herein described is provided in order that the roller 50 on the slide 22 shall make one up stroke every five minutes, as it is on the up stroke of the slide that movement is imparted to the marking rollers hereinafter described, and in the embodiment of the invention herein described and shown the minute roller is turned every five minutes. It is obvious however that the gearing may be changed to suit other speeds of rotation of the spring barrel, and to operate the roller 50 at other than five minute intervals.

Hooks or catches 51 are provided on the guide plate 19 towards its upper end and other hooks 52 are provided on the sides of the slide 22. A coil spring 53 connects each pair of hooks 51 and 52. These springs tend to hold the roller 50 against the cam 49. Integral with the slide 22 is a forwardly extending arm 54 having a slot 55 therein. On the main shaft 24 a yoke 56 is pivotally mounted, and supported by end plates 57 integral with the latter is a pawl shaft 58 which also passes through the slot 55.

On the main shaft 24 a plurality of marking rollers 59, 60, 61, 62, 63, 64 and 65 are

arranged which are free to turn thereon. The roller 59 has a plurality of numerals around its periphery to indicate the year, and usually consists only of the two last numbers as for instance "37", "38" shown thereon. 5 The rollers 60 and 61 operate together to indicate the day of the month, the roller 60 marking the units and the roller 61 the tens. The roller 62 carries a series of ordinals 10 which indicate the month in the conventional manner "3" denoting March and so on. The roller 63 carries the letters "AM" and "PM" alternately, these are usually placed at frequent intervals around the periphery. 15 The roller 64 shows the minutes, and to simplify the mechanism hereinafter described every five minutes only is shown thereon as for instance "25", "30" and so on. The roller 65 shows the hour and carries the ordinals "1" 20 to "12" on its periphery. It will be noted that all the letters and numerals on the rollers appear backwards so that when an impression is made the result is legible.

The rollers 60, 61, 63, 64, and 65 are usually 25 mechanically turned, preferably by the means hereinafter described, whereas the rollers 59 and 62 are generally set by hand since they only require setting at such infrequent intervals. Secured to each of the rollers 59 and 30 62 is a ratchet wheel 59^a and 62^a respectively, the teeth of which are preferably formed as shown at 62^a in Figure 3. On the dog shaft 25 are dogs 59^b and 62^b each of which is normally held in engagement with the teeth of 35 its ratchet wheel by a spring 59^c or 62^c secured both to its dog 59^b or 62^b and also to the rod 26. The tension of these springs is sufficient for the dogs to hold their rollers against accidental rotary movement. More- 40 over it will be noted that the teeth 59^a and 62^a of the ratchet wheels 59^a and 62^a respectively are so shaped that their dogs hold them against accidental movement in either direction.

45 To the rollers 61, 63, 64 and 65 ratchet wheels 61^a, 63^a, 64^a and 65^a, loosely mounted on the shaft 24, are connected by means hereinafter described, so that the said ratchet wheels will turn their respective rollers when 50 they turn unless pressure is exerted against the periphery of the rollers to check their rotation, and when this occurs the rollers are turned as their ratchet wheels would have turned them as soon as the peripheral pressure is released. The teeth 61^a, 63^a, 64^a and 55 65^a of these ratchet wheels are so shaped that each ratchet wheel is positively held against rotation in one direction by its dog 61^b, 63^b, 64^b or 65^b; and these dogs are, in turn, held 60 in engagement with their wheels by springs 61^c, 63^c, 64^c and 65^c. The ratchet wheels are however free to be turned in the opposite direction by their pawls 61^e, 63^e, 64^e and 65^e.

The pawls 61^e and 65^e are preferably in- 65 tegral with or secured to a cross member 66, and the pawls 63^e and 64^e are usually integral with, or secured to, a second cross member 66^a which is attached, frequently by welding, to the first named cross member 66. In this manner the pawls are all held 70 together so that they all turn through the same angle. Around the pawl shaft 58 springs 67 are arranged. One end of each spring is fastened under the yoke 56 and the opposite end of each spring bears against 75 the cross member 66. In this manner the pawls are forced towards their ratchet wheels, and one pawl at least is held in engagement with its wheel. The pawls are so formed 80 that their engaging ends are stepped one behind the other. In this way on successive up strokes of the slide 22 the minute marking roller 64 alone is turned. When, how- 85 ever, this roller is turned from "55" to "00" obviously the hour marking roller 65 must also be rotated. The minute roller ratchet wheel 64^a is therefore provided with one 90 deep tooth 64D so that the pawls may turn sufficiently for the pawls 65^e to engage and turn its ratchet wheel 65^a. Similarly, the 95 hour ratchet wheel 65^a is provided with one deeper tooth 65D so that when the marking roller 65 is moved from "11" to "12" the AM and PM roller 63 will also be rotated 100 by engagement of the pawl 63^e with its ratchet wheel 63^a. Again each alternate tooth 63D of the ratchet wheel 63^a is made deeper so that each time, when turning from PM to AM the date pawl 61^e will engage 105 and turn its ratchet wheel 61^a.

As there are an even number of marking 110 dies, namely twelve, on the minute, hour, and AM and PM, rollers, a uniform amount of movement on the part of the ratchet wheels and pawls is required to rotate these 115 rollers so that the next die is in working position. In fact each of these marking rollers must turn through substantially thirty degrees. But as the unit date roller 60 has only ten marking dies on its periphery 120 and as the tens date roller 61 has only four marking dies thereon, and must be turned when the roller 60 moves from "9" to "0" special means must be provided to take care of their movement.

The ratchet wheel 61^a is mounted on a 125 sleeve 68 on the main shaft 24 as hereinafter more fully described. On the sleeve a gear 69 is fixed. Between the marking rollers 60 and 61 is an annular plate 72 held 130 stationary by the dog shaft 25, which latter engages the bifurcated lug 81 integral with the said plate 72. Rotatably supported in the plate 72 is a spindle 71 which is sub- 135 stantially parallel with the main shaft 24. The spindle 71 carries a gear 73 which meshes with a gear 74 loosely mounted around the main shaft. On one end of the 140 gear 74 the marking roller 60 is shrunk or otherwise secured. Around a collar 73^a in-

tegral with the gear 73 a pinion 70 is secured, the latter meshes with a gear 69 fixed on the sleeve 68. In this manner rotary movement of the ratchet wheel 61^a through a given
 5 angle, usually 30 degrees, imparts a rotary movement through a different angle, usually 36 degrees, to the marking roller 60 through the gears 69, 70, 73 and 74. Integral with the gear 69 is a second gear 75 having only
 10 a few teeth on one side of its periphery. Each time the marking roller 60 brings the ordinal "0" into marking position the gear 75 turns the pinion 76 on the spindle 71 thereby causing the gear 77, secured to the
 15 said pinion, to turn the gear 78 which is loosely mounted on the sleeve 68. The marking roller 61 is shrunk onto, or otherwise secured to, the end 78^a of the gear 78. The gearing 75, 76, 77 and 78 is so proportioned
 20 that as the roller 60 is turned from "9" to "0" the roller 61 is turned as from "1" to "2" through approximately 90 degrees.

Mounted in the annular plate 72 and projecting laterally on both sides of the latter
 25 are pins 85 and 86. Around the pin 85 one on each side of the plate are leaf springs 87 and 88. The opposite ends of these springs bear against the pin 86. Intermediately of their length these springs are flexed
 30 substantially at right angles at 87^a and 88^a. These flexed portions are adapted to engage recesses 89 and 89^a on the inside of the rims of the rollers 60 and 61 respectively, thereby tending to hold these rollers in correct
 35 stamping position.

The ratchet wheels 63^a, 64^a and 65^a are provided with pins 63^s, 64^s and 65^s which extend substantially parallel with their axes. In the sides of the marking rollers 63, 64
 40 and 65 adjacent to their ratchet wheels are segmental slots 63^k, 64^k and 65^k into which the said pins project. Springs 63ⁿ, 64ⁿ and 65ⁿ are secured at one end to their respective pins and at their opposite ends to the said
 45 marking rollers. If peripheral pressure is being exerted on the rollers at the time that the ratchet wheels are to be turned the pins 63^s, 64^s and 65^s turn in their respective slots and the springs 63ⁿ, 64ⁿ and 65ⁿ are
 50 stretched. As soon as pressure on the rollers is released the springs cause them to rotate until the ends of the segmental slots strike the pins, and then the next die on the periphery of each marking roller is in stamping
 55 position. In the case of the ratchet wheel 61^a the operation is the same except that the pin 61^s moves in a slot 61^k on the periphery of the disc 68^a integral with the sleeve 68. In that case the spring 61ⁿ is
 60 secured both to the pin 61^s and also to the disc 68^a.

95 designates an indicating cypher held between the plates 96 and 97 fixed around the shaft 24 to show which time stamping
 65 mechanism a time card was punched with.

From the foregoing it is believed that the operation of the device will be readily understood. Moreover while the preferred construction has been described and shown it is understood that the construction is susceptible to such modifications as fall within the scope of the appended claims.

What we claim as our invention and desire to secure by Letters Patent is:

1. In a time stamp, the combination of a stationary guide plate, bearing brackets on said plate, a main shaft supported by said brackets, a plurality of type-rollers and ratchets loose on said main shaft, means for yieldingly connecting each ratchet with one of said rollers to permit limited circumferential movement, a holding dog and an actuating pawl for each ratchet, a common pivoted support for said pawls, said pawls being rigidly secured on said support in stepped relation whereby normally at least one pawl engages its associated ratchet, said ratchets having notches of variable depth to permit successive engagement of said pawls upon predetermined rotation of the adjacent ratchet, a clockwork controlled slide having upstanding slotted lugs on said guide plate adapted to operate said pawl carrying support, and a shaft oscillatable about said main shaft and carrying said support and extending through said slotted lugs, whereby said shaft is bodily moved to operate said support when the clockwork controlled slide is reciprocated.

2. In a time stamp, the combination of a main shaft, a plurality of type-rollers rotatably mounted on said main shaft, ratchets between said rollers and loosely carried by said main shaft, means for yieldingly connecting each ratchet with one of said rollers, said means being adapted to permit limited circumferential movement of said rollers relative to their associated ratchets, a holding dog and an actuating pawl for each ratchet, a common pivoted support for said pawls, means engaging said support for yieldingly urging said pawls toward said ratchets, clockwork controlled means for actuating said support, said pawls being rigidly secured on said support in stepped relation, whereby at least one pawl engages its associated ratchet, said ratchets having notches of variable depth to permit successive engagement of said pawls after predetermined rotation of an adjacent ratchet, a rotatable member on said main shaft connected with one of said ratchets by yielding connected means, and a set of gears between said rotatable member and the type-roller pertaining to said last named ratchet whereby said type-roller is rotated with a speed varying from that of the ratchet.

3. In a time stamp, the combination of a stationary guide plate, bearing brackets on said plate, a main shaft supported by said brackets, a plurality of type-rollers and

ratchets loose on said main shaft, means for yieldingly connecting each ratchet with one of said rollers to permit limited circumferential movement, a holding dog and an actuating pawl for each ratchet, a common pivoted support for said pawls, said pawls being rigidly secured on said support in stepped relation whereby normally at least one pawl engages its associated ratchet, said ratchets having notches of variable depth to permit successive engagement of said pawls upon predetermined rotation of the adjacent ratchet, a clockwork controlled slide on said guide plate adapted to oscillate said pawl carrying support, a rotatable member on said main shaft connected yieldingly with one of said ratchets to permit limited relative rotation, a stationary member adjacent the type-roller pertaining to said last named ratchet, gears between said rotatable member and said type-roller adapted to rotate the latter with a different speed than that of the ratchet, one of said gears being supported on a shaft secured on said stationary member, and yielding means on said stationary member adapted to engage said last named type roller, for maintaining the latter in a plurality of operating positions.

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