(No Model.)

R. H. SMITH.

HAND PRINTING STAMP.

No. 435,159. Patented Aug. 26, 1890.

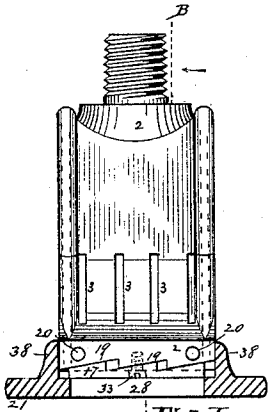


Fig. I

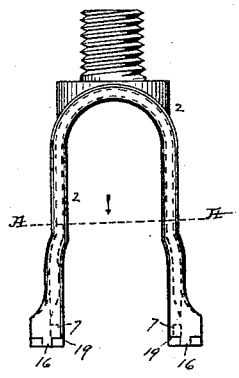


Fig. II

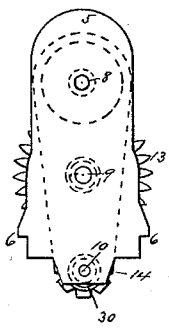


Fig. IV

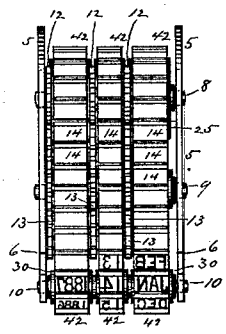


Fig. V

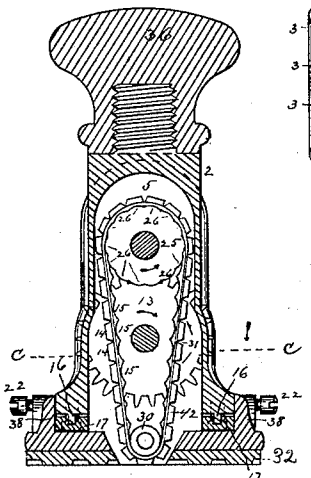


Fig. VI

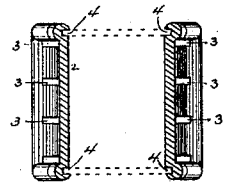


Fig. III

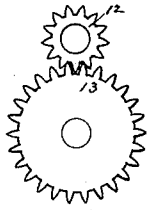


Fig. VII

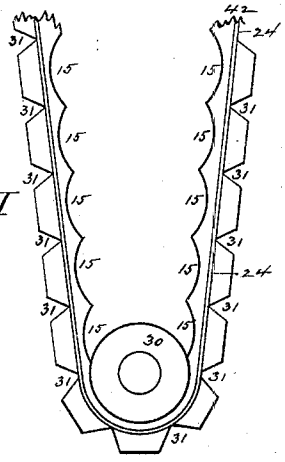


Fig. VIII

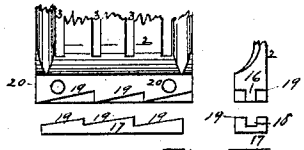


Fig. IX

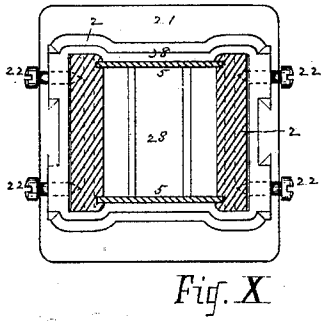


Fig. X

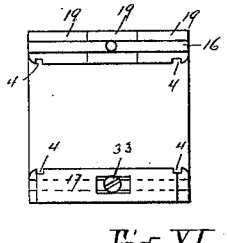


Fig. XI

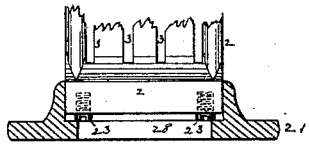


Fig. XII

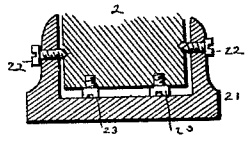


Fig. XIII

Witnesses.
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F. E. Curtis.

Inventor:
R. Hale Smith.
By J. A. Curtis.
his Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

RICHARD HALE SMITH, OF SPRINGFIELD, MASSACHUSETTS.

HAND PRINTING-STAMP.

SPECIFICATION forming part of Letters Patent No. 435,159, dated August 26, 1890.

Application filed February 2, 1887. Serial No. 226,223. (No model.)

To all whom it may concern:

Be it known that I, RICHARD HALE SMITH, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Hand Printing-Stamps, of which the following is a specification and description.

My invention relates more especially to that class of hand printing-stamps in which endless rubber printing-belts having raised elastic printing-characters made on the outer or exposed side are moved around and against a support to bring the desired printing characters into position beneath said support to make the impression; and the object of the invention is to make a flexible printing-belt of such form and in such manner as that it may be easily and accurately moved to bring the different elastic printing characters with which it is provided into the proper and desired position for printing; also, to avoid the friction of the printing-belt and the consequent corresponding distortion of the elastic printing characters thereon which obtains in the use of those stamps in which the printing-belts are moved or dragged over a fixed or stationary support; also, to provide suitable actuating wheels and drums whereby the printing-belts may be easily and accurately moved; also, to construct the stamp with a frame, side plates, and an end plate, all secured together, forming a case to contain and secure all the working or movable parts in position, whereby all the working parts may be readily separated and reassembled again, and at the same time the stamp be strong, substantial, and durable, and to provide mechanism for the vertical adjustment of the end or die plate to cause the faces of the printing characters of the die-plate and those of the printing-belts to accurately correspond and be upon the same horizontal plane, and I accomplish these objects by the construction substantially as hereinafter described, and illustrated in the accompanying drawings, in which—

Figure I is a front view of a hand or dating stamp made according to my invention, with the end or die plate in section, showing the position of the adjusting mechanism between the end of the frame and the end or die plate. Fig. II is a side view of the frame with the side plates and the end or die plate removed. Fig. III is a horizontal section at line A of Fig. II, showing the grooves or channels into which the side plates are inserted and secured. Fig. IV is a side elevation of the side plates, in which the movable parts are all suspended and between which they operate. Fig. V is a front view of the side plates containing the drums and printing-belts with their actuating-wheels, all in position for being inserted and secured in the frame. Fig. VI is a vertical section of the stamp at line B of Fig. I, showing all the parts in place. Fig. VII is a side view of one of the drums which carries the printing-belts and the actuating-wheels for moving the same. Fig. VIII is an enlarged side view of a portion of one of the printing-belts and the revolving support beneath and against which the printing-belt passes. Fig. IX is a front side view of a portion of the end of the frame and a corresponding view of an adjusting-piece secured between the end of the frame and the end or die plate to adjust and secure the latter more or less distant from the end of the frame in a position perfectly parallel therewith. Fig. X is a horizontal section at line C, showing the position of the side plates when in place with reference to the screws which secure the end or die plate in position, and also showing the opening through the end or die plate through which the printing characters on the printing-belts protrude when the parts are secured in place. Fig. XI is a reverse plan view of the lower end of the stamp-frame with one of the adjusting-pieces removed to show the lower end of the frame; and Fig. XII is a side view of the lower end of the frame with the end or die plate in section, showing adjusting-pieces in the form of screws turned into the end of the frame, and whose projecting heads are in a position between the end of the frame and the die or end plate. Fig. XIII is a vertical sectional view of the lower portion of the case at the axis of the clamping-screws which secure the end plate in position.

In the drawings, 2 represents a U-shaped frame made, preferably, of cast soft metal, with a threaded spindle at the top upon which to turn a knob 36, and open at the sides, with a vertical groove or channel 4 at each edge to receive the side plates 5, which I punch out

from sheet metal, and which are inserted into said grooves from below, the frame being sprung open sufficiently to permit the small shoulder 6 on each edge of each plate 5, near the lower end, to pass above and rest upon the small lug 7, cast in the lower end of each groove 4, when the frame is sprung together again.

The movable parts of the stamp are suspended in and between the two plates 5, as shown in Figs. IV and V, in which 8 is a spindle or shaft having a bearing at its ends in the plates 5, and a drum or series of drums 25 (shown more clearly in Fig. VI and in dotted lines in Fig. IV) are placed on this shaft, each drum, when more than one is used, being arranged to turn on its shaft or axis independently of the others and the periphery of these drums I make corrugated, of any desired contour, but preferably of segmental form, as is shown clearly in Fig. VI, the purpose of which will be hereinafter further explained.

Upon each drum 25 and firmly secured thereto I place a small toothed wheel 12, as shown in Fig. VII. A shaft 9 has its end bearings in the plates 5 in a position below the shaft 8, and upon this shaft I place a series of toothed wheels 13—one opposite and to engage with each toothed wheel 12 on the shaft 8 and each arranged to turn independently of the others—and the teeth of these wheels 13 project through openings or vertical slits 3, made in the opposite sides or fronts of the frame, sufficiently to allow the wheels 13 to be turned by the fingers from the outside of the frame. The lower shaft 10 also has its end bearings in the plates 5, upon which is placed a drum or a series of drums 30, (shown in Figs. V, VI, and VIII,) corresponding in number to those on the shaft 8, and preferably as small as convenient, and these drums 30 are arranged to turn on the shaft 10 each independently of the others. It will be seen that the same number of drums are placed on each shaft and that the drums correspond in their vertical position on the upper and lower shafts.

The endless rubber printing-belts 42 are molded on both sides, one (the exposed side) being divided by recesses 31 into any desired number of sections or blocks 14, each having the desired printing characters made upon its outer flat surface, and the opposite or inner side of the belt having a segmental or concave recess directly opposite each printing character or block 14 on the outside, these segmental or concave recesses being shown clearly at 15 in Fig. VIII. These segmental or concave recesses and also the lower drum or series of drums 30 are made of such size and curvature that the periphery of the drum (when each printing-belt is placed in position around and beneath it and over and above the corresponding upper drum 25) and also the upper segmental corrugations on the periphery of the corresponding upper drum 25 will fit into the respective recesses with which they may be in contact when each printing-belt is placed in a taut position around the upper and lower drums 25 and 30, as shown clearly in Fig. VI. As thus constructed, the divisional recesses 31 in the outside of the printing-belt cause the desired flexure at the points between the sections or printing blocks and characters of the belt, and that section or block which contains the printing character which is directly beneath the lower drum 30 and in position to print has a good bearing against the periphery of that drum, and is therefore firm and solid, and the printing character thereon retains its natural form and is not distorted or stretched out of its normal shape while making its imprint. This feature of a revolving backing support and a printing-belt made as above described, with segmental or concave recesses opposite the printing characters to bear against said support, is a new and important one in printing-stamps, as it operates to prevent undue strain upon and distortion of the printing characters while making the impression, and causes the printing-belt and the characters thereon to be adjusted into printing position with a natural and easy condition of the material of which the belts are made, and when made as above described this printing-belt, being more flexible at or opposite the recesses 31, bends or yields more readily at that point than at any other, so that all the segmental or concave recesses in the back side of the belt which are below a horizontal plane extending through the axis of the drum 30 have a good bearing against the latter and give all that part of the printing-belt a solid and firm character.

To give the printing-belt greater strength and durability and render it more entirely free from undue tension, I make it with a cloth band or core extending through its entire length, as shown at 24 in Fig. VIII. As each drum 25 is turned by means of its actuating toothed wheel 13 engaging with the gear on that drum, the corrugations 26 thereon give an increased hold over the ordinary traction between two flat or smooth surfaces, and the printing-belt is caused to move more promptly and accurately to bring its printing characters into the desired position. The periphery of the drums 25 may be covered with an elastic substance to give increased traction, if desired. An end or die plate 21 is used in connection with the frame 2 and plates 5 by being clamped or secured to the lower end of the frame by means of suitable screws 22, whose inner ends are pointed and enter correspondingly-tapered holes or conical recesses made at 20 in the outside of the frame on opposite front and back sides.

When a fixed printing-die 32 is to be used with this stamp by being secured to the lower side of the end or die plate 21, the lower part of the printing-belt and its printing characters thereon below the drum 30 project through an opening 28, made in the die-plate and die, as shown clearly in Fig. VI, and the

printing-faces of this fixed die and those of the printing characters on the printing-belts must be upon the same horizontal plane in order that a good impression of the lower characters on the printing-belts and of those on the fixed die may be made at a single impression, and as the thickness of the material of which the fixed die is made often varies considerably I provide for a vertical adjustment of this die-plate containing the fixed die into a position a little more or less remote from the end of the case or frame by placing adjusting-pieces between the extreme lower end of the frame 2 and the upper plane surface of the die-plate. These adjusting-pieces may be in the form shown at 17, extending along the lower end of the frame on both sides, with short inclined upper surfaces 19 engaging against correspondingly-inclined surfaces on the lower end of the frame 2, as shown clearly in Figs. I and IX, the lower end of each side of the frame having a tongue 16 extending along its width, which enters a corresponding groove 18 in the upper side of the piece 17 to keep the latter always in its proper position, and this piece 17 is secured to the lower end of the frame on each side by a small screw 33, turned into a vertical slot or opening made through the piece 17, as shown in Figs. I and XI. If, for example, the fixed die 32 should be a little too thin and the printing-face of the characters on the belt should project through and a little beyond those of the characters on the die, the latter may be easily adjusted to avoid this difficulty by loosening the screws 22 and removing the die-plate and loosening the small screw 33 and moving the adjusting-piece 17 longitudinally in a direction to remove its lower surface a little farther from the lower end of the case or frame to cause the projecting printing-faces of the characters on the belt and those of the die, when the latter is replaced, to be on the same horizontal plane.

The adjusting-pieces, instead of having the short inclined adjusting-surfaces 19 and extending along the lower end of the frame, as shown in Figs. I and IX, may be made in the form of screws 23, to be turned into threaded holes in the extreme end of the frame 2, with their heads projecting therefrom, and the upper plane surface of the die-plate abut against them when the die-plate is in position. To facilitate the adjustment of the die-plate by means of these screws 23, holes somewhat smaller than the heads of these screws may be made through the die-plate 21 and the die 32 directly beneath and concentric with said screw-heads, if desired, when it can be done without interfering with any of the printing characters on the die, and the die-plate be adjusted by loosening the screws 22 slightly and then inserting a small screw-driver into these small holes through the die-plate and turning the screws 23 either in or out, as the case may be, and then tightening the screws again, when the face of the printing characters of the printing-belt and those of the die are on the same plane. In one case the upper plane surface of the die-plate abuts against the lower surface of the pieces 17 and in the other case against the lower surface of the heads of the screws 23, both these lower surfaces being made movable and serving to abut against and support the die-plate.

In assembling the parts the drums and their toothed actuating-wheels may be placed on their bearing-shafts, the printing-bands placed around the upper actuating-drums and the lower supporting drums or rolls, with their shafts secured in place in the plates 5, and when all are thus secured in place the plates, with the above-mentioned other parts suspended between them, are inserted up into the grooves 4 of the frame from below, and the two opposite sides of the frame are pressed together with the small shoulders 6 at the lower ends of the plates 5 above and resting upon the small lugs 7 (shown in dotted lines in Fig. II) at the lower ends of the grooves 4. The die-plate 21 is then secured in place by the screws 22, and the knob 36 being turned on in place the stamp is ready for use.

I do not wish to be understood as limiting my invention to the use of any particular number of printing-belts or of drums carrying the same, because it will be evident that the invention is adapted by the same principle of construction to a variety of uses. For example, a single printing-belt, with a single drum above and below for carrying and supporting the belt, may be used where different words are to be printed—such as "Registered," "Missent," "Paid," "Correct," or any other words—by making the printing-belt of the required width and forming or molding the desired words on the belt, so that any one of them may be brought into position below the movable supporting-drum 30 to make the impression. Then, again, by using any desired number of printing flexible belts with the proper printing-numerals molded thereon, so that any one of them may be moved independently of the others, the stamp, without any fixed die attached to the die-plate, may be used for a numbering-machine.

In the accompanying drawings the stamp is represented as being provided with three printing-belts, upon one of which may be made elastic printing characters representing the different months of the year, with numerals upon the middle one corresponding to and representing the days of the month and years, or a series of years on the other belt, this arrangement adapting the stamp for dating purposes. I make a flange 38 on the upper side of the die-plate extending upward all around the lower end of the case sufficiently to cover or hide and protect the adjusting-surfaces of the adjusting mechanism and prevent injury thereto from the accumulation of dust and dirt. It will be seen that in this construction of the case and the die-plate secured thereto, as above described,

great strength, durability, and freedom from danger of the clogging of the printing-belts by dirt are all obtained. The side plates, being located opposite the attaching-screws 22, receive the inward thrust or pressure of the latter, and they (the screws) may be turned in against the case tight and snug to secure the die-plate firmly in position without the least danger of crushing or bending in the sides of the case or frame.

I am aware that it is not new to move a printing-wheel in a hand-stamp in this manner, as it is shown in an English patent to J. J. Baronowskie, dated April 23, 1850, and I do not claim the same, except as in combination with the other parts, as hereinbefore described.

I am not aware that a movable supporting-roll or cylindrical drum for supporting or backing a rubber printing-belt having segmental or concave recesses on the inner side opposite the printing characters to bear against said roll or drum while the printing characters on the belt opposite the said drum were being used to print has ever been used in a printing-stamp. Neither am I aware that the case or frame of a printing-stamp adapted to contain the movable endless belts of printing characters has ever been provided with adjusting mechanism, as hereinbefore described, for adjusting the face of the printing characters on the die-plate and those of the printing-belt which are in position to print to the same horizontal plane to make a perfect impression and to maintain the said adjustment always in a perfectly-parallel position.

Having described my invention, what I claim as new is—

1. In a hand printing-stamp, the combination, with the side plates 5, each provided with a shoulder 6, of a series of operating-drums, a series of rubber printing-bands actuated by said drums, the U-shaped frame made in a single piece and provided with lugs 7 and channels 4, into which channels said plates are adapted to be inserted and secured, and the die-plate for fixed printing characters constructed to form a socket for the lower end of said frame, substantially as described.

2. In a printing-stamp, the combination of a case for containing movable endless rubber bands provided with printing characters, and a die-plate for fixed printing characters constructed to form a socket for the lower end of said case and adapted to be adjusted into position more or less distant therefrom and to cover and protect the adjusting-surfaces, substantially as described.

3. In a printing-stamp, the combination of a case for containing movable endless printing-bands, a socket die-plate for fixed printing characters, side conical pointed clamping-screws whose pointed ends are adapted to enter corresponding conical recesses in the case or frame, and adjusting-screws for adjusting the said end or die plate into the desired position more or less distant from the case, substantially as described.

4. In a printing-stamp, the movable printing-bands, in combination with their actuating-drums, toothed drum-wheels secured to and concentric with said drums, a series of toothed actuating-wheels engaging with said drum-wheels, whereby the latter and the drums are made to revolve, and a backing-support at the lower end of the case for supporting and backing the printing characters while in position to print, substantially as described.

5. In a printing-stamp, the combination of the flexible movable band having on one side elastic printing characters made thereon and integral therewith, and with segmental or concave recesses made on the other side opposite the printing characters, and a cylindrical revolving support for supporting and backing the printing characters on said band when in position to print, substantially as described.

6. In a printing-stamp, a flexible printing-band having on one side a series of elastic printing characters made thereon and integral therewith and a series of segmental or concave recesses formed on the other side opposite the printing characters to fit and have a bearing against the cylindrical surface of the backing-support, whereby the printing-surfaces of said elastic characters are caused to maintain a true plane as they are successively brought into position to print, substantially as described.

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Witnesses:
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WILL. F. TRIPP.