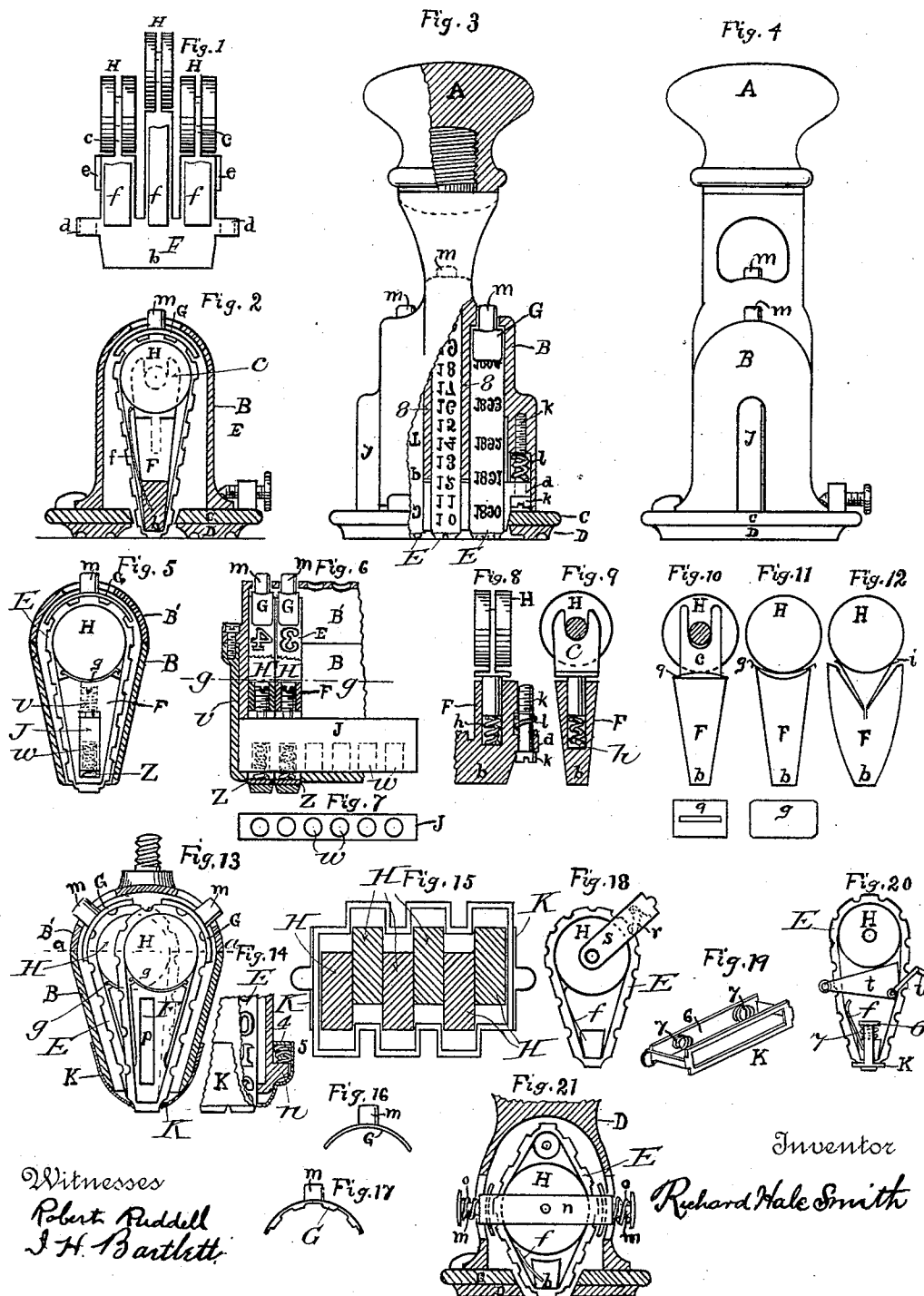


(No Model.)

R. H. SMITH.
HAND PRINTING STAMP.

No. 449,831.

Patented Apr. 7, 1891.



UNITED STATES PATENT OFFICE.

RICHARD HALE SMITH, OF SPRINGFIELD, MASSACHUSETTS.

HAND PRINTING-STAMP.

SPECIFICATION forming part of Letters Patent No. 449,831, dated April 7, 1891.

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To all whom it may concern:

Be it known that I, RICHARD HALE SMITH, a citizen of the United States of America, residing in Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Hand Printing-Stamps, of which the following is a specification, reference being had to the accompanying drawings and letters and figures of reference marked thereon.

My invention relates to that class of hand-stamps known as "band dating and numbering stamps," wherein the movable printing characters are of rubber and arranged upon endless belts, which are so mounted that any character upon either belt may be brought into position to print in desired combination either by themselves or in connection with a type or stereotyped die; and the object of the invention is to provide a stamp of more substantial construction, with greater convenience and certainty of movement of the printing-belts and less inconvenience in assembling and repairing than those now in use; to provide an individual automatic tension for each belt, thereby guarding against an overstrain, which causes a distortion of the printing characters or a slackness which allows displacement and imperfect results, and (where several belts are used without any fixed die, as in numbering-stamps) to provide individual adjustment for each belt, so that the thinner ones may be made to print with as much fullness as the thicker ones, and (where belts are used to print in connection with a fixed die) to provide a flexible adjustment of the belt-faces to the thickness of the die, so that they may be adjusted to project a little beyond the face of the die, and thereby insure the better taking of ink by the moving characters, which are allowed by the yielding or flexible adjustment to be pressed back at each impression to the same plane as the face of the fixed characters, and also (where several belts are used, as in stamps for numbering) to provide a ready means of bringing the exposed printing characters of each belt into exact line with the other so exposed and to lock them in that position while printing; and I accomplish these objects by the construction, substantially as hereinafter de-

scribed and illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the core of a dating-stamp, showing three pulleys mounted and illustrating one feature of my invention. Fig. 2 is a vertical side view of a stamp, the shell being in section, showing the arrangement of parts, the core surrounded by the printing-belt, the feeding-clamp G, the tension-spring *f*, the case B, die plate C, and die D. Fig. 3 is a front view of a complete dating-stamp with part of the case, die, and plate broken away, showing the printing-belts, the flexible adjustment, and one of the clamps by which the belts are moved. Fig. 4 is a side elevation of Fig. 2 with case unbroken. Fig. 5 is a side view of a numbering-stamp with a part of the case removed, showing the working parts. Fig. 6 is a front view of a portion of a six-belt numbering-stamp, showing two mounted belts in position and the manner of adjusting the height of each to the others, and also the method of securing them in the case. Fig. 7 is a reverse plan view of the supporting-bar J, (see Figs. 5 and 6,) on which the separate cores are adjusted. Figs. 8 and 9 are sectional views of a portion of adjustable core, showing modified form of belt-tension adapted to use in Figs. 2, 3, and 4. Figs. 10, 11, and 12 are end views of cores, showing other modifications of belt-tension. Fig. 13 is a side view of a numbering-stamp with the case in section, constructed with the core all in one piece and with the belt-pulleys set alternately to the right and left of the center for convenience in moving the belts and in mounting the handle, and also showing an end sectional view of the belt-lock K. Fig. 14 is a front view of a portion of Fig. 13 with portions broken away, clearly showing the belt-lock. Fig. 15 is a horizontal section of Fig. 13 at line *a* with printing-belts removed. Fig. 16 is a side view of the clamp G, by which the printing-belts are clamped onto the inside movable support and moved or fed along between the two moving parts. Fig. 17 is a side view of a feeding-clamp with its inner surface recessed, so as to take strong hold of the printing characters. Figs. 18, 20, and 21 are views of mounted printing-belts, showing modified forms of clamping the belt against the inside

movable support by and between which it may be positively carried along without soiling the fingers of the operator. Fig. 19 is a perspective view of the belt-lock K, (see Fig. 20,) which is a modified form of the one shown in Figs. 13, 14, and 15 and adapted to a different method of mounting the belts, which permits of the retaining-springs being inside the belts.

Referring now to the drawings in detail, A indicates the handle; B, the shell; C, the die-plate; D, the die; E, endless belts; F, the core; G, the clamp; H, movable belt supports or pulleys; J, a supporting-bar; K, a locking-clamp; *b*, lower end of the core; *c*, bearings for pulleys; *d*, lugs upon the core; *e*, guide-lugs upon the core; *g*, *h*, *i*, *a*⁹, tension-springs.

The construction and operation are as follows: B represents the case or shell of the stamp, which for dating-stamps of the class shown in Figs. 2, 3, and 4 I cast all in one piece, of soft metal, the inside being ready to receive the working parts just as they come from the mold. In this stamp three printing-belts—one each for the months, days, and years—are mounted to revolve around a central core, the lower surface of which forms the backing for the printing characters while in position to print. From the upper side of the core-block rise three standards, the one for the day-belt being highest, as that belt is longest, upon each of which is mounted a wheel H, which I make preferably of steel with a deep central annular groove, which sets freely astride the crotched blade *c*, which forms the upper end or portion of the core, and, although I deem this method of supporting the pulleys the best, yet it will readily be seen that, if the upper portion of the core or part which supports these pulleys be recessed to allow the periphery of the pulley to rest within such recess, either directly upon such support or upon an intervening spring, the same result will be accomplished. By this arrangement I am enabled to support the pulleys independently of their outer parallel faces and therefore save the space which would otherwise be employed for supports arranged at the sides of the pulleys and adjacent to their outer faces.

Where it appears desirable and sufficient room is had, I provide partitions between the upper supports and pulleys, as shown in Fig. 3, the partitions 8 being cast integral with the stamp-case and extending downward the requisite distance, which partition serves also to strengthen the case against the thrust of the die-plate screw. I may, however, interpose thin sheet-metal plates between the separate cores, or may provide other guides to maintain them in desired position, or I may place the pulleys and belts close together.

The elastic printing-belts passing around the core and pulley will maintain the pulleys in the desired position, while allowing them to revolve with sufficient freedom for the requisite ease in the adjustment of the belt

to bring the desired printing characters into place.

In Figs. 10, 11, and 12 I illustrate a modification in the construction of the portion of the device which supports the pulleys. In Fig. 10 the blade or part *c* is projected upward, as shown in Fig. 1, and the opening for the axial guide is cut down a trifle deeper. An elliptical sheet-metal spring *g*, provided with an opening to allow it to pass over the blade, is arranged to rest upon the upper end of the support, which presents a flat shoulder, the spring being placed in position with its convex side next the pulley periphery, against which it bears. It will thus be seen that while the crotched blade maintains the pulley in central position the spring will give the requisite tension, while the whole construction is simple and inexpensive. In Fig. 11 the upper portion of this support is recessed in a line approximating the curve of the circumference of the pulley, and a flat spring *g* is interposed between the two surfaces, which spring has a constant tendency to assume a straight line, thus carrying the pulley away from its support and drawing the belt taut between the pulley and core end. The outer ends of this spring are turned downward to prevent its being accidentally moved from the desired location, and its length is such that the ends will not bear against the belt when in position. In Fig. 12 a like construction is illustrated, excepting that the recess within the support is V-shaped rather than curved, and a spring *i*, also V-shaped, is inserted, the folded portion being projected into a recess adapted to receive it at the vertex of the V-shaped opening in said support.

Where the crotched bearing *c* is employed I may either provide a tension-spring *f*, (see Fig. 2,) which bears against the inner face of the belt as it passes between the pulley and core end or lower support, and thus give the requisite tension, or I may mount the crotched bearing *c* upon a stem which fits within a recess in the support F (see Fig. 9) and provide a coiled spring which fits within said recess and is interposed between the bottom of such recess and the lower end of said stem.

As a means for moving the belt or belts I provide a construction by which I am enabled to grasp the belt between two moving surfaces, both of which move and carry the belt with them, thus preventing any undue strain upon the belt and avoiding the necessity which has heretofore existed of straining the belt tightly over a traction drum or surface, which surface has heretofore been covered with rubber or other like material to give the requisite traction, the moving of which drum has heretofore been employed for the purpose of moving the belt, and in the employment of such device it has been found that in extremely warm weather the material of which the belt and the covering of the traction-roll are composed is liable to become softened and to adhere to the traction-surface, over which

it is tightly strained, thus rendering the device inoperative, while with my construction the belt is not required to be strained to any considerable extent, but may be mounted comparatively loosely upon its supports, and the inner movable support or pulley may have a smooth polished surface, to which the belt would not in any event adhere.

The construction I prefer to employ is that illustrated in Figs. 2, 3, 4, 5, 6, 13, and 16, the same consisting of an inner supporting-pulley H, mounted in any convenient manner, and a segmental clamping-piece G, (see Fig. 16,) which piece is provided with an outwardly-projecting finger-piece *m*, the curvature of which segmental piece is the same as the curvature of the pulley H plus the thickness of the belt resting upon it. This clamp moves freely to the right or left, and when it is desired to move the belt to the right, for instance, the stamp is inverted to bring the printing-face in sight. This also causes the clamp to drop away from the belt. The finger-piece *m* is carried to the left without pressure toward the pulley. Then the same is gently pressed inward toward the pulley, thereby clamping the belt between the part G and the pulley-surface, and when so clamped the finger-piece *m* is moved to the right, thereby revolving the pulley and carrying the belt with it.

If in some instances there may appear to be danger of the smooth clamp G sliding upon the face of the characters upon the belt, then a similarly-shaped clamp provided on its inner surface with projections or notches, as shown in Fig. 17, may be employed, thus effectually avoiding any possibility of the clamp slipping. This, however, I have as yet found to be entirely unnecessary, and I deem the smooth-faced clamp the best. The same principle is involved in the application of this feature of the invention as illustrated in Fig. 21. In this figure I show two segmental clamps mounted in a frame *n*, which frame is pivotally mounted, as shown, and the pulley H is interposed between the upper and lower supports of the belt, the clamps being mounted at each end of the frame *n*, as before stated, and being provided with a coiled spring *o*, interposed between the end of the frame *n* and the outer overhanging end of the finger-piece *m*, so that the clamps are normally held away from the belt; but upon the finger-pieces being grasped between the thumb and finger and pressed toward each other they will grasp the belt between the segmental clamps and the outer surface of the pulley H and enable the same to be moved in either direction with the utmost freedom.

In Fig. 18 I illustrate the application of the same principle, wherein a pawl is employed to engage the belt between the printing characters and clamp the same between the pawl end and the surface of the pulley H, this pawl being pivotally mounted in the frame *s*, the inner end of which frame is pivotally mounted

on the central line of the pulley H, a spring being employed to force the pawl end inward.

In Fig. 20 another modification of the same principle is illustrated, in which the inner moving surface consists of a frame *t*, pivotally mounted so as to swing between the lower surface of the pulley H and the upper portion of the lower support of the belt, the pivotal point being preferably located outside of the traverse of the belt and a coiled spring being provided at the pivotal point to normally carry the frame *t* upward. The free end of this frame is curved where it bears against the inner surface of the belt, and a latch *u* is provided, which is pivoted to the free end of the frame *t* and is free to move on its pivot toward this frame, thereby securing the belt between the curved surface of the frame and the latch and enabling it to be moved in either direction, the direction of movement of course depending upon the position of the frame *t* at the time of the securing or clamping of the belt between the latch and frame. A spring normally maintains the latch *u* in a position away from the belt.

I am aware that a hand-stamp has heretofore been made having a movable backing for the belt and having an opening through the shell exposing the outer surface of the belts, so as to enable them to be moved with the fingers, and I make no claim to such construction, the objections to which are manifold, among which objections may be stated that the fingers will become soiled from the ink upon the belt and the opening allows dust to gather upon the inking surface or faces of the type, thus materially interfering with the printing operation.

Heretofore when several printing-belts have been used in one printing-stamp, (not in connection with a die,) as in stamps for numbering, which usually carry six belts, when the stamps are first made belts of as nearly as possible uniform thickness have been selected to work in the same set, and the result is that if this selection be carefully made a good impression or print is obtained from the characters on each belt; but after the stamps are put into use it is found that very many of them require to be repaired, largely on account of the fact that the "units" belt is required to be moved ten times to one movement of the one next to it and one hundred times to once of the "hundreds" belt, thus rendering it necessary to replace one or more of the belts long before the others require to be renewed, and as these belts as manufactured are of varying thickness it becomes almost impossible for the parties having the repairs to make to replace the discarded bands with others of exactly the same thickness. Hence the faces of the printing characters in a stamp so repaired will not lie in the same plane, and it becomes necessary to produce this result by either filing away a portion of the bridge or lower support or backing over which the bands pass to allow for the extra

thickness of the new belt or to build up on this backing to supply the deficiency in thickness, all of which is very objectionable and expensive and tends to soon destroy the stamp.

5 To overcome this objectionable feature I provide independently-adjustable cores or supports, each of which is provided with a large mortise running through it parallel with the axis of the belt. Through these mortises a

10 bar J passes, with a sliding fit upon its sides. This bar is fixed in the case and the cores are free to move a short distance vertically except as controlled by a spring and set-screw. The set-screw *v* passes through the upper portion of the core, and the lower end of it projects into the mortise (see Figs. 5 and 6) and bears against the bar J. This bar is provided with spring-receiving openings *w*, in which spiral springs *z* rest, their outer ends bearing

20 against the lower face of the mortises in the cores. The tendency of the springs *z* is to force the lower end of the core and bar apart. As, however, the bar is fixed to the frame or shell and cannot move, the cores will be forced

25 outward as far as permitted by the adjustment of the set-screws *v*, and in this manner the individual cores may be adjusted to bring the faces of the characters upon all the belts to the same plane regardless of variations in

30 thickness.

I am aware that it is not new to apply a spring tension to a shaft sustaining a series of printing-belts, which method is liable to strain one of the belts too much and the others

35 not enough or not at all, and I make no claim to such construction. I am not aware, however, that a printing-stamp has been constructed having an independent constant automatic tension for each belt.

40 In the employment of movable belts in connection with a fixed die it is found that the characters upon the belts being frequently changed do not become as thoroughly saturated with ink as the characters upon the fixed die, and hence will not give as clear an impression. I therefore provide a means to cause the characters upon the belt or belts to project beyond the plane of the characters upon the fixed die, thus insuring a thorough inking of these characters, and so construct the

50 device that upon forcing the stamp downward in the act of printing, the core will retreat until the faces of all the characters are in the same plane. I accomplish this by constructing the core (see Figs. 1, 3, and 8) with lugs *d*, projecting at each side, the shell or case B being provided with recesses to receive the same (see Fig. 3) and allow a free vertical movement to the extent required. These

60 openings or recesses are preferably formed in the enlargements *y* on the shell. The lugs *d* are provided with openings through which adjusting-screws *k* pass. These being screwed into the roof of the openings, coil-springs *l*

65 are interposed between the upper surface of the lugs *d* and the roof of the openings, the screws passing through the springs. The

constant tendency of these springs is to force the lugs *d* and core F, to which they are attached, outwardly, while the extent of the outward movement of the core is limited and controlled by the screws *k*. This, it will be seen, will insure the inking of the faces of the characters upon the belts while allowing them to retreat to the plane of the face of the characters on the fixed die when in the act of printing.

In Fig. 8 I illustrate a construction showing the individual belt tension and the automatic flexible adjustment of the core to the fixed die, as last above described.

As it is desirable to bring the printing characters upon all the belts in exact alignment, I provide a lock, preferably consisting of cup-shaped shell K, (see Figs. 13 and 14,) which fits the lower portion of the stamp-case B, and is provided with an opening or openings through which the characters upon the belt may project, and at the sides of the stamp case or shell B are lugs *n*, the shell K being shaped to pass over these lugs and being provided with an overhanging part 4, between which and the lugs *n* springs 5 are arranged to force the shell upward. The opening through the lock is of a size to just allow the characters to pass, and when it is desired to change any of the characters to be used in printing the shell K is forced downward or away from the face of the stamp, thus contracting the springs 5. The desired changes are then made and the shell released, when the springs will operate to carry the shell back to place, and if any of the characters be slightly out of line the sides or opening through which they pass will bear against them and bring them to proper alignment. If, however, any of the characters be materially out of line, then their faces will strike against the part K and prevent its returning to its normal position, thus readily indicating the fact that the characters are not in correct position to print.

In Fig. 19 I illustrate a modification in the shape of the lock, wherein a frame alone is employed and is held in place by a bar 6, passing through the stamp-shell from side to side, the case being provided with an opening to receive the same, and springs 7 being arranged below the bar 6, so as to carry the face of the lock toward the face of the stamp. The operation of this arrangement is the same as the other, it being carried away from the stamp-face with the thumb and finger and returned to it by the operation of the springs.

Having therefore described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a printing-stamp, the combination of a centrally-arranged core F, having a crotched or open support at its upper end, a sustaining-wheel H, mounted in the support, and a printing-belt, substantially as shown.

2. In a printing-stamp, the combination of a printing-belt, an inside movable backing or

support, and an outside clamp arranged to bear against the printing-belt and clamp the same against the inside support and move the belt with the clamp, substantially as described.

5 3. In a printing-stamp, the combination of a die-plate to accommodate a fixed die and a frame or core on which one or more endless belts of raised printing characters are so mounted as to revolve through said die-plate, 10 said core or frame being arranged to be flexibly adjusted with relation to said die-plate, substantially as shown.

4. In a printing-stamp, the combination of a series of printing-belts, upper individual 15 supports and a lower support for the belts to revolve around, and an independent tension-spring for each belt arranged to maintain a constant and uniform tension to each belt independently of each other, both while at 20 rest and while being adjusted, substantially as and for the purposes described.

5. In a printing-stamp, the combination of a series of printing-belts, a corresponding series of independent cores, and a support upon 25 which each core is individually adjustable vertically.

6. In a printing-stamp, the combination of a flexible movable belt having a series of raised elastic printing characters molded thereon, a 30 support for backing the printing characters on said belt while in position to print, and a lock K, consisting of a frame having an opening through it to secure the printing characters in exact position while printing, substantially 35 as described.

7. In a printing-stamp, the combination of a sustaining-pulley having an annular groove, a support for the same arranged in said groove, a printing-belt, and a backing for the printing 40 characters, arranged at the printing end of the stamp, substantially as shown.

8. The combination, in a printing-stamp, of a frame, a printing-belt, a sustaining-pulley having its bearing between its outer faces, 45 and a backing for the printing characters, substantially as shown.

9. In a printing-stamp, the combination of a case or shell B, a printing-belt, a backing for the printing characters, arranged at the 50 printing end of the stamp, a core-block F, a sustaining-pulley supported by said block, around which the belt passes, provided with a shaft or axle, and a support for said sustaining-pulley, having an open bearing to receive 55 the shaft, whereby the shaft and pulley may be readily removed and replaced.

10. In a printing-stamp, the combination of a mounted printing-belt, an inside backing or support, and an outside segmental piece 60 G', by which the printing-belt may be moved or fed along, substantially as described.

11. In a printing-stamp, the combination of a printing-belt, a support for the same, a belt-

moving device arranged to engage the belt between the characters thereon and move the 65 same in the same direction with said adjusting device, and a backing against which the inner face of the belt rests opposite the point of engagement of the belt-moving device, substantially as shown. 70

12. In a printing-stamp, the combination of a die-plate arranged to receive a fixed die, a frame or core having one or more endless belts of raised printing characters mounted thereon and arranged to revolve and project 75 through said die-plate, springs arranged to force the frame or core outwardly through said die-plate, and screws arranged to limit the outward movement of the core, substantially as shown. 80

13. In a printing-stamp, the combination of a movable core having one or more printing-belts suitably mounted thereon and provided with ears or lugs d, a frame within which the core is arranged, provided with recesses to 85 receive said ears, springs arranged in said openings to bear on said ears and force the core outward, and adjusting-screws to limit the outward movement of the core, substantially as shown. 90

14. In a printing-stamp, the combination of a series of printing-belts, an upper and lower support for each belt to revolve around, and a corresponding series of springs arranged to force the upper and lower support apart, 95 whereby independent tension is had for each belt, substantially as and for the purpose described.

15. In a printing-stamp, the combination of a series of printing-belts, a corresponding series of independent individual cores, and means to vertically adjust said cores, substantially as shown. 100

16. In a printing-stamp, the combination of a series of printing-belts, a corresponding series of independent cores, and a fixed supporting-bar J, upon which each core is individually adjustable vertically, substantially 105 as shown.

17. In a printing-stamp, the combination of 110 a flexible movable belt having a series of raised elastic printing characters molded thereon, a support for backing the printing characters on said belts while in position to print, a movable lock K, whereby the printing 115 characters are secured in exact position while printing and from which position they cannot be moved in either direction until the lock has been raised, and springs arranged to hold the lock in position, substantially as 120 described.

RICHARD HALE SMITH.

Witnesses:

FRED. D. PRATT,
WILL. F. TRIPP.