

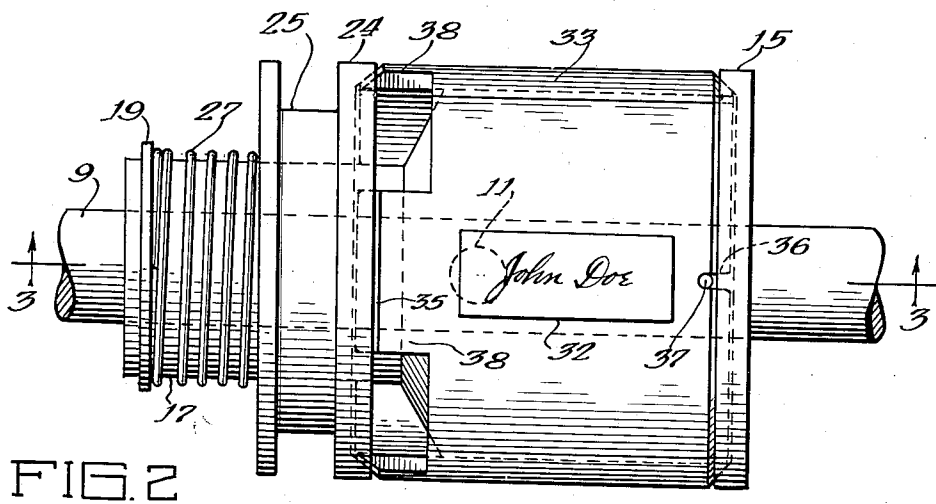
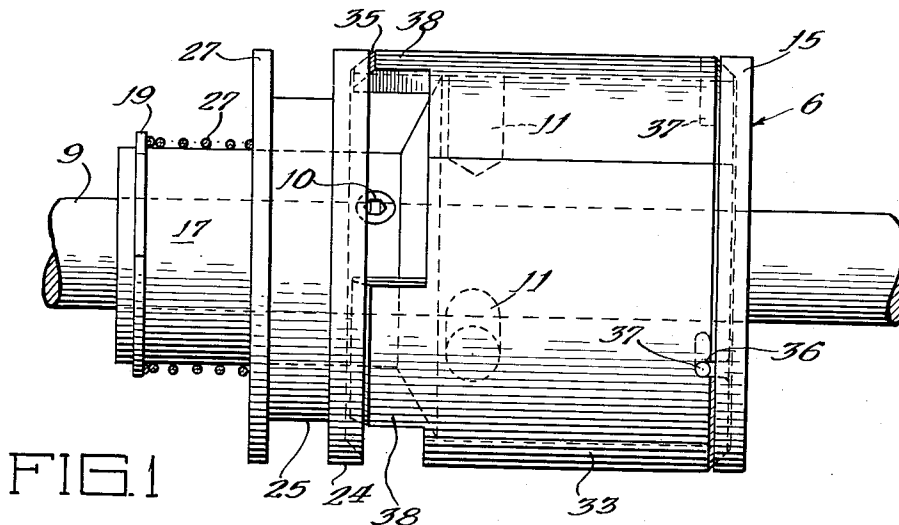
April 11, 1961

J. J. KESSLER
IMPRINTING PLATE CYLINDER

2,978,980

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2 Sheets-Sheet 1



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FIG. 3

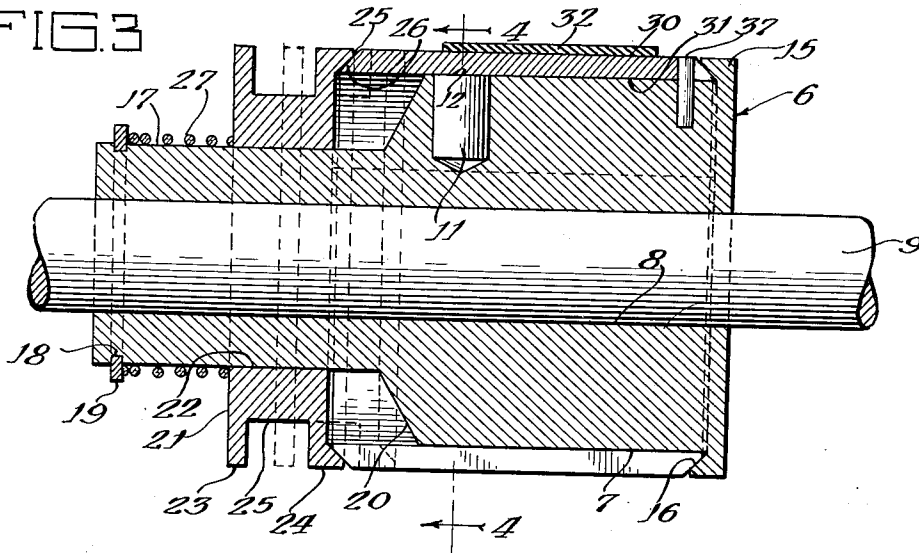


FIG. 4

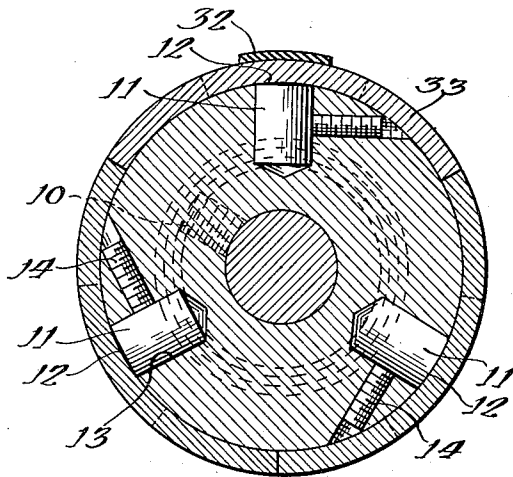
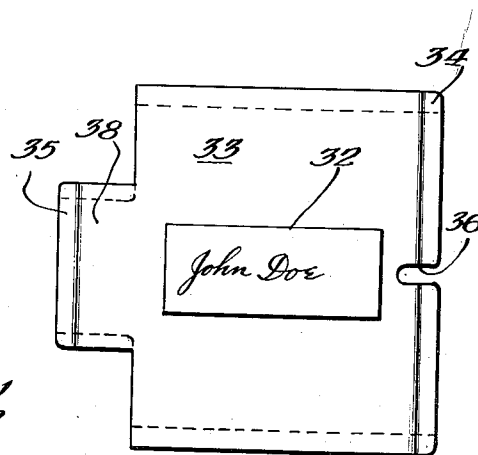


FIG. 5



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IMPRINTING PLATE CYLINDER

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5 Claims. (Cl. 101-378)

This invention relates to a device for imprinting successive lengths of continuous form stationery, and more particularly to a cylinder on which an imprinting plate may be detachably secured.

The structure of the present invention is used principally to imprint repetitive matter upon successive lengths of stationery in continuous form. For example, oftentimes a central office of a business organization will prepare all of the checks which are passed out through regional or district offices of the organization throughout the country. Each check may be validated with the authorized signature of the regional officer, and checks going to all of the particular regional offices will be prepared in a series. The work of preparing the checks may occur weekly or even more often. It is therefore important that the plate or mat for imprinting the authorized signature be capable of being changed quickly and accurately so as to handle each group of checks as expeditiously as possible.

Formerly, it was necessary either to replace the entire imprinting cylinder being used, or to remove and position a second signature mat about the rotatable cylinder. Considerable time was required to do this because each mat of the authorized signature had to be accurately placed on the rotatable cylinder so that the impression would be transferred to the check in the correct signature location. This meant that many separate screw and bar adjustments had to be made to achieve accurate alignment in the longitudinal, circumferential, and radial directions. The present invention obviates this time-consuming operation and provides means by which signature plates may be quickly positioned upon the rotatable cylinder with extreme accuracy maintaining this position throughout the rotation. The present invention also permits imprinting plates to be made of heavier construction thereby insuring against breakage and deformation during handling or storing.

The primary object of this invention is to provide a new and improved device for imprinting written matter upon successive lengths of continuous form stationery.

Another object is to provide a device which will allow rapid change of signature plates by extremely simple manual movements.

A further object is to provide simple and quick-attaching securing means to hold signature plates in position.

A further object is to provide cooperating simple structure to accurately position the signature plates both longitudinally and circumferentially by a single movement.

Still another object is to provide a structure to hold a plurality of signature plates upon a cylindrical mounting surface during a quick-change operation.

Other objects, features and advantages of the present invention will be apparent from the following illustration of a preferred embodiment in the accompanying drawings, in which:

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Figure 1 is a plan view of an imprinting cylinder, partially broken away, illustrating the invention.

Figure 2 is a plan view of the imprinting device shown in Figure 1 taken about 90° therefrom.

5 Figure 3 is a central sectional view through the device taken substantially as indicated along line 3-3 in Figure 2.

Figure 4 is a transverse sectional view taken substantially as indicated along line 4-4 in Figure 3.

10 Figure 5 is a plan view of one of the signature plates.

Imprinting devices may be used on various business machines and are commonly used on continuous-form stationery in connection with bursting machines. The present cylinder for holding signature plates may be used as desired as, for example, with an imprinting unit for a business machine. The illustrated structure is an imprinting cylinder to be used in conjunction with other mechanisms of a complete imprinting unit. In general, the new and novel imprinter cylinder consists of four basic elements: (a) a rotatable roller adapted to act as a mounting base for several imprinter plates, (b) arcuately curved imprinting plates, (c) a stop-flange which grips one edge of the imprinting plates, and (d) a quick-clamping collar which grips the opposite end of the imprinter plates.

One of the features of the present invention is concerned with the accurate support of an imprinting plate in position to do a proper imprinting job. The support is made in the form of a cylindrical roller base 6 preferably provided with a circular cylindrical mounting surface 7 to receive imprinting plates. The roller base has a centered longitudinal bore 8 for attaching the roller concentrically to a circular cylindrical shaft 9 by which the support is driven. The bore 8 is formed so as to permit the roller base to fit snugly about the shaft with a set screw 10 threaded through a portion of the roller and bearing against the shaft, which permits the roller base and shaft to be rigidly fastened together. In the embodiment illustrated, the roller base has a surface 7 of about 2 3/4 inch diameter for use in supporting plates for signature imprinting on checks or the like.

The roller base may be constructed of any durable material that will retain its shape and permit accurate machining of the circular cylindrical surface 7 to provide a very accurate mounting surface for detachable imprinter plates. This surface is finished smooth and intended to provide supporting surface against which an imprinting plate may rest and be properly positioned. A plurality of Alnico magnets 11 are mounted at spaced apart locations in the roller base and machined at their outer ends 12 flush with the roller's circular surface 7. Each magnet may hold an imprinting plate temporarily in position on the base during a plate changing operation. The magnets are secured in radially directed bores 13 by set screws 14 which exert side bearing pressure upon the magnet body.

Means are provided at one end of the cylindrical plate receiving surface to cooperate in retaining the imprinting plates thereon. In the present embodiment, an integral, radially directed flange 15 extends outwardly adjacent one end of the roller base. The flange is of sufficient thickness longitudinally of the roller base to act as a rigid stop member against which the imprinting plates may abut. The flange has an annular groove on its inwardly facing side formed by an annular sloping surface 16 of conical section which faces both the roller base surface 7 and the opposite end of the cylinder.

Means are provided for removably retaining imprinting plates on the base in proper position. The base is provided with a smaller circular cylindrical surface 17 longitudinally adjacent the end of the roll which is op-

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posite the flange 15 for the purpose of mounting the retaining means. The smaller cylindrical surface 17 joins the larger surface 7 by a conical section 20 intermediate the ends of the roller base. A collar 21 is longitudinally slidably mounted upon the cylindrical surface 17. The collar has a bore 22 therein sufficiently larger than the supporting cylindrical portion to permit easy movement of the collar without binding. The collar has a pair of spaced outwardly extending flanges 23 and 24 with an intervening groove 25 to provide easy finger gripping areas. The flange 24 is formed with an annular longitudinally extending nose 25 having a sloping surface 26 facing the flange 15 at the opposite end of the cylinder. The sloping surface 26 is intended to cooperate with the sloping surface 16 of the opposite flange to hold an imprinting plate between them against the base.

In the preferred embodiment illustrated, the flange, roller base, and collar supporting surface are formed as integral elements of a single cylinder for ease of construction and maintenance.

A compression force is used to urge the collar longitudinally of the cylinder into a clamping position. This force is provided by a compression spring 27 which bears in a longitudinal direction against a split-ring retainer 19 mounted in an annular groove 18 formed in the supporting surface 17 and the slidable collar. The spring may be of the coiled wire type wrapped about the circular cylindrical end surface 17. The spring urges the collar toward the larger plate supporting surface, movement of the collar being limited by engagement thereof with the inclined surface 20.

The sloping surfaces 16 and 26 of both the flange and collar face each other and the roller base for holding an imprinting plate captive between them. In the embodiment illustrated, the collar is constructed of a size such that both sloping surfaces 16 and 26 will be at the same radial distance from the axis of the cylinder. However, to those skilled in the art, location and size of the collar and its supporting surface may be changed without impairing the intended function of holding the imprinting plates.

The imprinting signature plate 30 is shown as arcuately constructed to have an inner surface 31 shaped to mate with the circular mounting base surface 7 in contiguous contact therewith. The dimensional plan view size of the illustrated plate is approximately 3 inches by 1½ inches for the specified cylinder base. The plate is constructed of heavy material to prevent breakage or deformation in handling or storage. It has a rubber signature pad 32 adhesively attached to the external surface 33 of the curved plate. The ends of the plates are formed with sloping surfaces 34 and 35 to mate respectively with the sloping surfaces 16 and 26 on the mounting base. The surfaces 34 and 35 face outwardly toward the ends of the cylinder and away from the surface of the roller base.

The plate has a slot 36 cut longitudinally into its larger end through the sloping surface 34. The slot is intended to receive snugly, a radially outwardly extending pin 37 attached to the roller base surface near the flange 15. The plate can be moved in a sliding motion along the curved surface 7 so that the slot will engage the pin. The mating relationship permits quick and accurate alignment of the signature plate in both the circumferential and longitudinal directions. Accurate radial positioning is achieved by the surface machining of both the supporting roll and the plate to the same diameter.

When the circular collar is resiliently urged into an engaging position with the edge of an imprinter plate, the sloping surface of the collar and flange mate with the sloping surfaces of the plate to act as wedges which impart a radial securing force to the plate. This radial force holds the plate against the cylinder in a very accurate longitudinal and radial direction. The imprinter plate, being arcuately curved and contiguously mated with the

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curved roller base surface, is limited in moving in a circumferential direction except by a complete rotation about the cylindrical shaft. The wedging sloping surfaces secure the plate to prevent any shifting of the plate relative to its supporting base.

In performing a plate-changing operation, the operator grasps the slidable collar and pulls it back against the spring to a plate-freeing position. The operator may then place a curved printing plate upon the carrier roller base. The arcuately curved plate will mate with the curved supporting surface, thus permitting only a longitudinal sliding movement. As the plate is slidably moved into position, the slot will engage the pin to accurately align it. While the Alnico magnets temporarily hold the plate in this aligned position, the operator merely releases the collar to permit it to spring into wedging position against the plate. The operation requires only two quick manual movements. Furthermore, several such plates may be positioned on the base, depending upon cylinder and plate sizes, with the same ease of handling.

The securing device effectively retains the locked position throughout the printing operation. At the completion of a printing run, the plates can be easily removed by reversing the order of manual movements. The operator would pull back the collar, slide back the plate free of the pin and grooves, and lift the plate from the base roll. For convenience in handling the plate, the end engaged by the slidable collar is reduced in circumferential width to provide an outstanding neck 38 easily grasped when the plate is on the cylinder since the neck ordinarily will extend over the smaller diameter surface 17.

The complete circular mounting surface enables a number of signature plates to be employed in one operation. This greatly increases the capacity of one unit to imprint several form lengths in one revolution. It also increases the versatility of a unit's use by providing changeable segments of a circumferential series of imprinting plates to vary the imprinting subject matter. A 7 inch circumferential roller base will accommodate approximately two imprinter plates, a 10 inch circumferential roller base will accommodate three plates, and so forth.

The foregoing detailed description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, for some modifications will be obvious to those skilled in the art.

I claim:

1. An imprinter roll for imprinting continuous form stationery, comprising: a cylindrical base having a longitudinal bore for mounting the base on a rotatable shaft, means mounted on said base securing said base to the shaft and causing said base to turn therewith, said base having a cylindrical surface adjacent one end and a radially directed flange extending outwardly beyond said surface; a collar mounted upon said base in spaced relation to said cylindrical surface and slidable longitudinally of the base, said collar and flange having annular sloping surfaces facing each other and said cylindrical surface; a conical section on said base interposed between said collar and said cylindrical surface; an arcuate plate having an inner surface shaped to mate with said cylindrical surface in contiguous contact thereagainst, said plate having opposite end surfaces shaped to mate with said sloping surfaces whereby the collar and flange sloping surfaces may engage said plate and hold the same against the base, said plate having an outstanding neck portion at one end, said neck portion being adapted to overlie said conical section thereby allowing easy removal of said plate; and releasable means encircling and supported by said base urging said sloping surfaces toward each other to maintain said plate therebetween.

2. An imprinter roll for imprinting continuous form stationery, comprising: a cylindrical base having a longitudinal bore for mounting the base on a rotatable shaft,

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said base having a cylindrical surface; means mounted on said base causing it to turn with said shaft; a plate clamping means carried by said base and including members spaced longitudinally of said base, each clamping means having a bearing surface extending entirely about said base to receive a plurality of plates about the base; a means releasably encircling said base and resiliently urging said clamping members toward each other longitudinally of the base; a conical section on said base interposed between one of said members of said clamping means and said cylindrical surface; an arcuate plate having an inner surface shaped to mate with said cylindrical surface in contiguous contact thereagainst, said plate having end surfaces engageable by the bearing surfaces of said clamping means and resiliently held against said cylindrical surface, said plate having an outstanding neck portion at one end, said neck portion being adapted to overlie said conical section thereby allowing easy removal of said plate.

3. An imprinter roll for imprinting continuous form stationery as specified in claim 2, wherein one clamping member is a collar slidably mounted on the cylindrical base and is spring urged toward said plate.

4. An imprinter roll for imprinting continuous form stationery, comprising: a circular cylindrical base having a longitudinal bore for mounting the base upon a rotatable circular shaft, said base having a first circular cylindrical surface longitudinally adjacent one end and a radially directed flange extending outwardly beyond said surface, said flange having an annular sloping surface on one side facing both the cylindrical base surface and the opposite end of the base; radially directed means for securing the base rigidly to said shaft; a circular retaining member mounted upon a second cylindrical surface of said base having a smaller radius than said first cylindrical surface, said retaining member being in spaced relation to

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said second cylindrical surface and slidable longitudinally of the base, said retainer having an annular extending nose having an annular sloping surface facing the flange sloping surface; a conical section on said base interposed between said first circular cylindrical surface and said second cylindrical surface; an arcuate plate having an inner surface shaped to lay in contiguous contact with said first cylindrical surface, said plate having opposite end surfaces shaped to mate with said sloping surfaces whereby the retainer and flange sloping surfaces may engage said plate and hold the same against the base, said plate having an outstanding neck portion at one end, said neck portion being adapted to overlie said conical section thereby allowing easy removal of said plate; and means mounted on said second cylindrical surface urging said sloping surfaces toward each other to maintain said plate therebetween.

5. An imprinter roll for imprinting continuous form stationery as specified in claim 4, wherein the urging means comprises a compression spring coiled about said second cylindrical surface, said spring bearing against a stop ring secured to the base and against the retainer member.

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