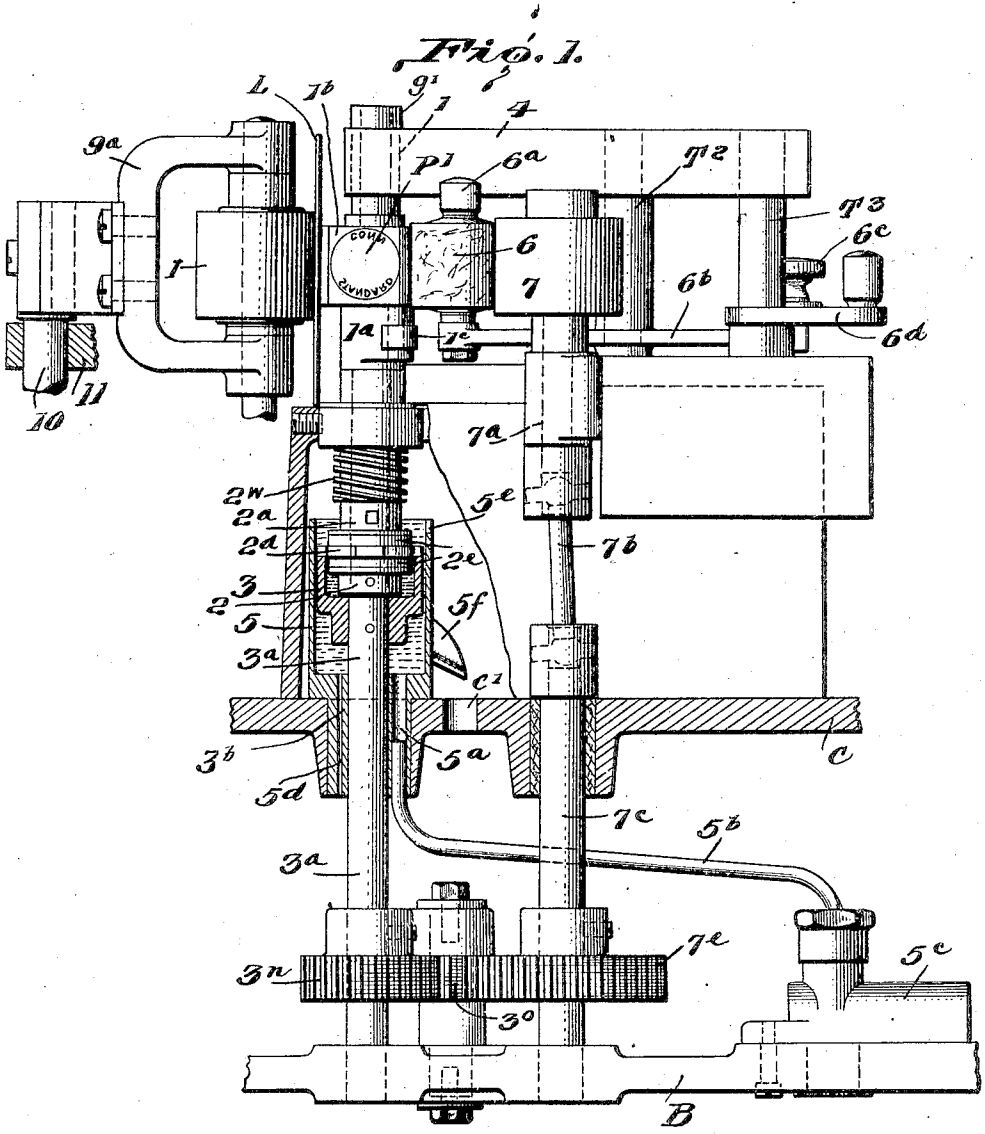
Oct. 9, 1923. 1,470,231

W. H. BOWES

POSTMARKING AND STAMP CANCELING MACHINE

Filed May 13, 1921 3 Sheets-Sheet 1

Fig. 1.



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POSTMARKING AND STAMP CANCELING MACHINE

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Fig. 2.

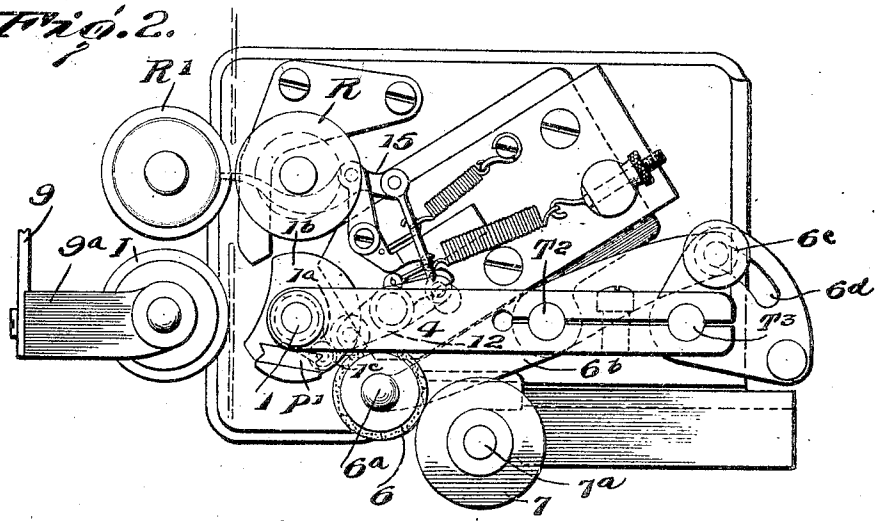


Fig. 3.

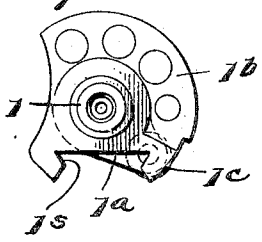


Fig. 4.

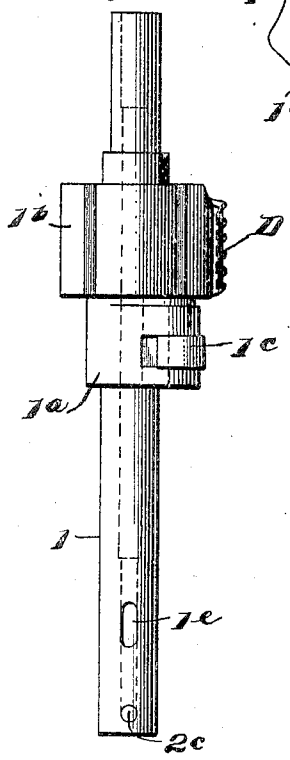
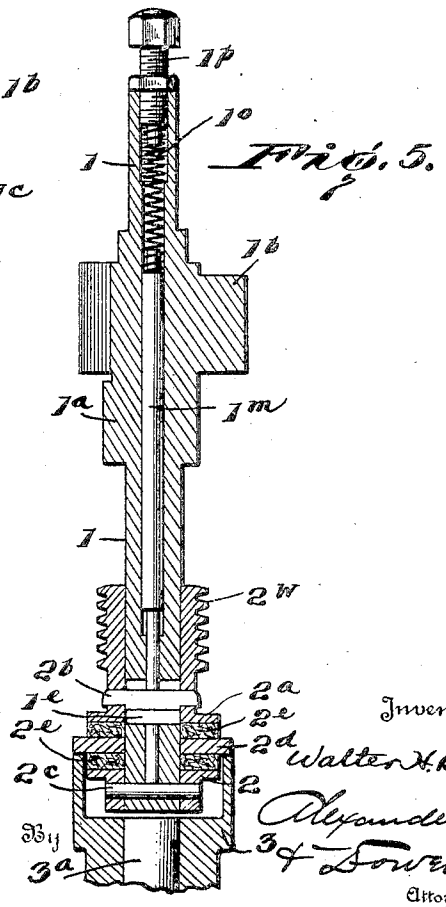


Fig. 5.



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Fig. 6.

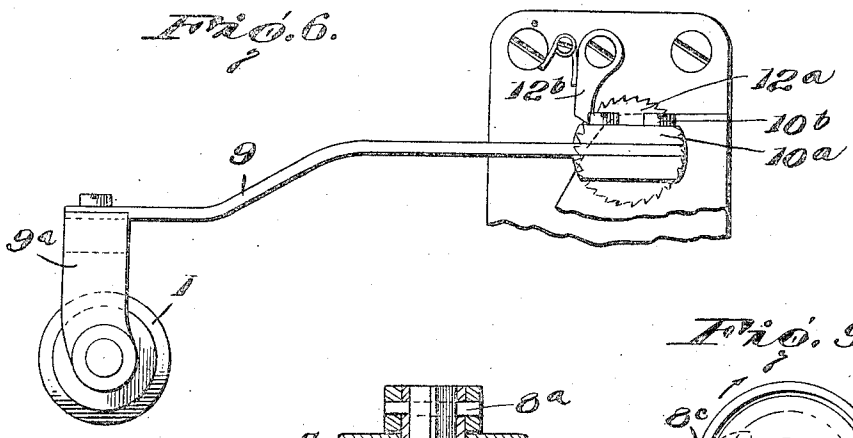


Fig. 8.

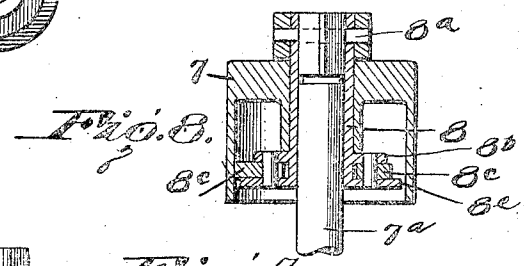


Fig. 9.

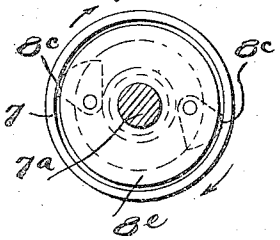


Fig. 7.

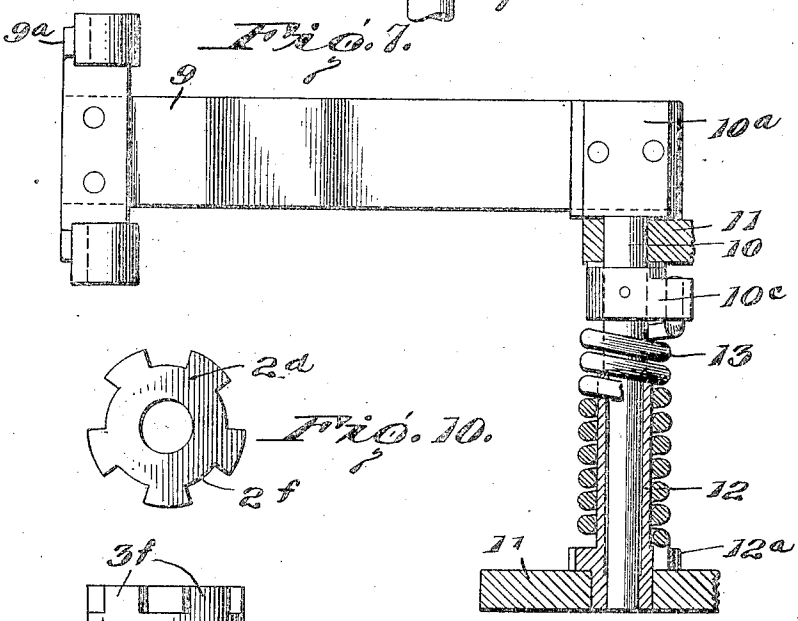
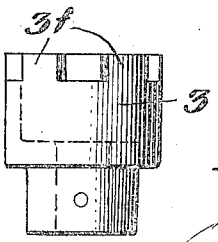


Fig. 10.

Fig. 11.



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UNITED STATES PATENT OFFICE.

WALTER H. BOWES, OF STAMFORD, CONNECTICUT.

POSTMARKING AND STAMP-CANCELING MACHINE.

Application filed May 13, 1921. Serial No. 469,305.

To all whom it may concern:

Be it known that I, WALTER H. BOWES, a subject of the King of Great Britain and Ireland, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Postmarking and Stamp-Canceling Machines; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to machines for postmarking and canceling mail, of the type commonly known as "Universal" stamp canceling and post marking machines, such as shown in patent to Graham #1,022,191, April 2, 1912, and Bowes Patent #1,356,886, March 18, 1921, but is adaptable to other types of machines wherein it is desired to make impressions upon articles such as letters, sheets of paper, checks, and the like. I will describe one embodiment of the invention particularly constructed and designed for use in connection with such stamp canceling and postmarking machines, but it should be understood that the invention is susceptible of other applications in the art and is not limited to the particular mechanism described.

One object of the present invention is to provide a novel combined die spindle and stop arm whereby are obtained increased strength, greater lightness, and enhanced practical speed of the machine; which I accomplish by making such members of a single piece of forged steel thereby reducing the weight of the printing member and the parts connected therewith; which have to be stopped and started for each letter or each impression made by the machine.

Another object is to provide means for automatically lubricating the clutch by which the said die spindle is actuated thereby keeping all the members of the clutch cool and greatly increasing the possible practical speed of operation of the machine.

Another object is to provide novel means for supporting and holding various rollers to their work with yielding spring pressure, so that the said rollers will be effectively held yieldingly to their work under the proper tension and with proper torque.

A further object is to provide novel means for supplying ink to the printing member in such manner that the inking devices not only do not retard such member but actually assist in accelerating the motion thereof during the initial starting movement of the said member.

I will explain one practical embodiment of the invention which is illustrated in the accompanying drawings, to enable others familiar with the art to understand, adapt and use the same and in the claims are summarized the essential features of the invention and the various novel features of construction and combinations of parts, for all of which protection is desired.

In said drawings;

Fig. 1 is in part an elevation and in part a sectional view of a portion of a stamp canceling and postmarking machine embodying the present invention.

Fig. 2 is a top plan view of Fig. 1.

Fig. 3 is a top plan view of the combined printer and spindle.

Fig. 4 is a side view thereof.

Fig. 5 is an enlarged vertical sectional view of the combined printer and spindle, and of the clutch attached thereto.

Fig. 6 is a plan view of one of the yielding rollers and its supports.

Fig. 7 is a side view thereof partly in section.

Fig. 8 is a sectional view of the inking roller and its clutch.

Fig. 9 is a bottom end view of Fig. 8.

Figs. 10 and 11 are detail top and side views of the clutch members of the spindle driving clutch.

In the construction indicated in the drawings the usual impression roller I coacts with the die-carrier or printer 1^b, the trip-pressure-roller R and the coacting trip-feed-roller R^1 being arranged in advance of the printer. These parts may be arranged and adapted to operate substantially as in the so-called "Universal" stamp canceling and postmarking machines, and therefore do not require further detailed description herein.

In the "Universal" machines heretofore made, the die spindle, the die hub or printer, and the stop arm, have been made in separate parts and the die and stop arm keyed to the spindle; and as a result ultimately in service considerable back lash developed due to the wear or shear of the keys and such back lash was a source of annoyance as it frequently permitted the printer to move closer to the felt ink roller, in some cases into actual contact with it, and in such cases

the felt roller, which is always revolving, wore away the corner of the die. One object of the present invention is to do away with any possibility of such back lash. Therefore in accordance with the present invention the die spindle, die hub or printer and stop arm are made or forged in one piece.

As shown (see Figs. 3–5) the die spindle 1, stop arm 1^a, and die hub or printer 1^b, are made integral, preferably in one forging; the said parts being of the proper size and location so that they can take the place of the three separate parts as heretofore made. The die hub or printer 1^b is provided with a suitable recess 1^s for the removable printing die P′ which is customarily employed in "Universal" machines. The stop arm 1^a is formed below the die hub 1^b and carries the usual roller 1^c adapted to engage the stop arm 12 controlled by the trip devices 15 as shown in Bowes' Patent #1,365,886; such a trip device is shown in Fig. 2 but forms no part of the present invention, and therefore need not be described in detail herein.

It will be seen that in this construction the spindle 1, die carrier or printer 1^b and stop arm 1^a are all forged or formed in one piece. There is no separate die shaft or spindle and there are no keys or pins for controlling the relative positions of the printer, spindle and stop arm, and therefore these parts have an absolute permanent fixed relation and are not affected by usage as are the separate parts shown in the aforesaid "Universal" machine.

The spindle 1 is rotated once each time the trip is released and for this purpose a friction clutch is employed. In my present invention the clutch is at the lower end of the spindle 1. This clutch comprises a collar 2 pinned fast to the spindle as at 2^c; an upper collar 2^a keyed to the spindle by a pin 2^b extending through a slot 1^e in the spindle, so that the collar 2^a can slide on the spindle while it is caused to revolve with it; the upper part of the collar 2^a is provided with a worm thread 2^w which worm operates the counter (not shown) as in the "Universal" machine. Loosely mounted on the spindle between the collars 2 and 2^a is a metal disk 2^d and between the opposed faces of the disk 2^d and collars 2 and 2^a are friction members 2^e which may be of cork or other suitable material. Preferably the disk 2^d is provided with cork buttons projecting above and below the surface thereof and forming the member 2^e as heretofore used on the "Universal" machine; but any suitable friction members may be employed.

The disk 2^d projects beyond the collar 2 and is provided with notches 2^f in its periphery (Fig. 10) which are adapted to be engaged with corresponding lugs 3^f on the upper end of a cup 3 (Fig. 11) which surrounds the collar 2 and lower disk 2^e. The cup 3 is pinned on the upper end of a shaft 3^a (Fig. 1) which extends through suitable bearings 3^b into the oil chamber in the top of the machine, (see Fig. 1) and said shaft may be continuously driven during the operation of the machine by suitable gearing from any source of power, as in the aforesaid "Universal" machine. The cup 3 when revolving causes the disk 2^d to rotate and furnish the power to rotate the spindle 1 whenever the stop 12 disengages the roller 1^c on stop arm 1^a.

The amount of frictional contact pressure between the surfaces of the friction members 2^e, 2^d and collars 2, 2^a may be regulated by a rod 1^m placed within an axial bore in the spindle 1 and bearing upon key 2^b in a slot in collar 2^a. Rod 1^m is normally depressed by a spring 1^o the tension of which is regulable by a screw 1^p as in my said Patent #1,365,886.

Below the stop arm 1^a the spindle is journaled in a bearing on the top plate C of the machine as indicated in the drawings; and above the printer the upper end of the spindle has a bearing in one end of an arm 4 which may be mounted on studs T^2 and T^3 on the top plate as in my said patent; and thus the spindle is securely positioned and has the advantages of overhead and underneath bearings.

To keep the parts cool and permit high speed of operation I provide means for continually lubricating the clutch. This means comprises a cup 5 which is preferably open at its upper end and extends above the top of the cup 3 (Fig. 1). Said cup 5 is supported upon the top of the oil chamber, and the stem or hub of the cup is conveniently made to form a bushing for the upper bearing of the spindle 3^a. This cup has an opening 5^a in its bottom which is connected by a pipe 5^b with an oil pump 5^c of any suitable construction, which preferably is secured to the bottom plate B of the gear frame, as in the "Universal" machine. The pump 5^c may be of any suitable kind and operate in any suitable way, and therefore the details of construction thereof are not illustrated. This pump is adapted to pump oil from the supply of oil in the trough in which the driving gears are placed and immersed in oil; suitable screens being provided to prevent dirt entering the pump. The oil passes through the pipe 5^b and opening 5^a into the cup 5 and fills the same, and thereby also fills the cup 3 and immerses the members 2^c, 2^d and 2^e of the friction clutch. The top of the cup 5 is cut away as at 5^e for escape of overflowing oil; and a flange 5^f is fastened to the outside of the cup 5 to catch the overflow oil and direct it into a small hole c', cut in the top of the

machine, through which it flows back into the gear trough, completing the circulation of oil. A small hole 5^a is drilled through the bottom of the cup 5 to permit oil to drain from the cup when the machine is at rest. This is desirable as it is sometimes necessary to open up the table of the machine, and if the cup was full of oil it would be annoying.

As shown (Figs. 1–2) the die P′ carried by the hub or printer 1^b is inked by an inking roller 6, which preferably has a felt face, and is mounted on a stud 6^a attached to a bar 6^b, which is pivoted on the stud T^2 and can be adjusted by means of a thumb nut 6^c engaging a slotted plate 6^d. These parts are substantially the same as like parts used in the "Universal" machine and need no further explanation herein. Ink is supplied to the felt roller 6 by a metal roller 7 mounted on a spindle 7^a and receiving its supply of ink from an ink reservoir (not shown) such as is used in the "Universal" machine.

The roller 7 is continuously driven during the operation of the machine and drives the roller 6 by frictional contact therewith. As shown the lower end of the spindle 7^a has a universal joint connection with the upper end of a link 7^b, the lower end of which has a universal connection with a spindle 7^c in the gear-trough; and this spindle 7^c has a gear 7^e meshing with one of the train of gears (3^c and 3^n) by which the spindle 3^a is driven, as in the "Universal" machine. The roller 7 however is not directly connected to its spindle 7^a but has a free running fit on a sleeve 8, (Figs. 8 and 9) which is fastened to the spindle by a pin 8^a. The spindle 7^a revolves in the direction of the arrow, (Fig. 9), carrying the sleeve 8 with it. The sleeve 8 has spaced annular flanges 8^b, 8^e on its lower end within the roller 7 (see Fig. 9) and clutch fingers 8^c are loosely pivoted between the said flanges; and the centrifugal force developed by the rapidly revolving spindle 7^a causes the clutch finger to fly out and bind against the inside surface of the roller 7, thus causing it to revolve as though it were fastened to the spindle, but leaving it free to turn at the same speed as the spindle, or faster; and any driving force applied to the outside of roller 7 in the direction of the arrow will carry it away from the clutch fingers 8^c. Any suitable clutch or ratchet and pawl device for driving roller 7 from spindle 7^a may be used as the means for giving a one-way drive to roller 7. In the present case the spindle 7^c is geared so as to rotate the roller 7 so rapidly as to cause it to rotate the inking roller 6 at a peripheral speed less than the peripheral speed of the printer 1^b on spindle 1 when it has attained full speed. To make this clear the action of the machine should be clearly understood; and is briefly as follows:

When the stop 12, that holds the die spindle 1 from revolving, is disengaged from arm 1^a by the trip mechanism 15, (when actuated by the passage of a letter L), the continuously moving clutch on the spindle causes it to instantly turn, but it has to turn a certain distance before it attains the same speed as the clutch which is driving it; and therefore at the moment when the face of the die P′ engages the felt ink roller 6, the speed of the die is less than it is when the clutch has established full control of the spindle 1. If the felt roller has the same surface speed as the die at the moment of contact therewith, and if their speeds from this point on can be made equal, all rubbing friction between them will be avoided. In order to accomplish this desirable result the driving gears for the spindle 7^c are so proportioned as to give the roller 7 a peripheral speed less than the highest speed of the die P′ but equal to the speed of the die P′ at the moment of contact with the felt roller 6. Thus the die P′ meets with no resistance whatever on coming into contact with the felt roller 6, and as the die increases in speed it speeds up the rollers 6 and 7 to its own speed by frictional contact, roller 7 meeting with no resistance from its clutch 8^c when moving in the direction indicated under the influence of the printer.

The impression roller I and other guiding rollers should be yieldingly mounted so that they will accommodate various thicknesses of mail or material L passed between them and the opposed driving rollers. Heretofore in the "Universal" machine the roller I has been supported on a bracket attached to a flat spring arm. In the present invention I improve the mounting of this roller by employing a combination of flat and coil springs. As illustrated in Figs. 6 and 7 roller I is mounted in a bracket 9^a which is securely fastened to one end of a flat spring arm 9 set vertically edgewise in a plane parallel with the plane of the axis of the roller. The other end of spring 9 is secured to the upper end 10^a of a pivoted or rocking rod 10 by screws 10^b. This rod 10 is mounted in suitable bearings in a bracket 11 attached to the top plate of the machine. The lower part of the rod 10 is surrounded by a sleeve 12 which is supported on the bracket 11. This sleeve 12 has a flange 12^a near its lower end which flange is provided with ratchet teeth on its periphery adapted to be engaged by a pawl 12^b pivoted on the bracket (see Fig. 6). An arm 10^c is pinned to the rod 10 above the sleeve 12, and a helical spring 13 surrounds the sleeve and rod below the bracket (see Fig. 7). The upper end of this spring is engaged with the arm

10e and its lower end with the flange 12a, and by turning the sleeve on the rod any desired tension can be given to the spring so as to cause it to normally press or hold the roller I toward the printer 1b with any desired degree of pressure; and when the spring 13 is adjusted for the proper tension it is locked by pawl 12b engaging the teeth of flange 12a. The flat spring 9 has no tension adjustment but is used in order to give the desired torque to the bearing. A slight amount of torque is necessary in the impression roller as the mail matter is frequently thicker on either bottom or top side. A flat spring alone would furnish both tension and torque if it could be made long enough, but on account of the limited space it is impossible to make it sufficiently long to be effective; and my novel combination of both flat and helical springs gives the desired resiliency and torque and is both practical and efficient.

I do not herein claim the mechanism for yieldingly mounting the impression roller as that forms the subject matter of a divisional application (Case #6639) filed November 18, 1921, Serial No. 516,120.

From the foregoing description and drawings it will be understood that the die driving clutch is continually lubricated by means of oil supplied by the pump when the machine is running; by this method of lubrication the clutch is kept cool and enables the machine to be driven at the highest practical operative speed; in fact at a higher practical operating speed than heretofore by making the die spindle, die hub and stop arm in one piece the weight of the parts which have to be started and stopped for each operation of the printer is greatly reduced; and such reduction of weight is of very great practical importance as it reduces the shock on the parts in stopping the die and it also facilitates speeding up the printer when released from the stop, and thus materially enhances the practical speed of the machine. By this invention applied to the "Universal" machines I am able to attain a speed of nearly 1000 impressions per minute without injurious heating of the die or clutch. In this invention I retain all the advantages of a "driven" die shaft, with the added advantage of being able to continually lubricate and cool the clutch; and I am enabled to use a worm on the die spindle for directly driving the counter (not shown).

What I claim is:

1. For mechanism of the character specified, a die spindle, printer, and stop arm, all formed integral, for the purpose specified.

2. In mechanism of the character specified having a rotating impression roller, a printer, and a spindle carrying the same; a continuously running friction clutch for driving the spindle, and means for continually flooding the clutch with lubricant to keep the clutch cool during the operation of the machine.

3. In mechanism as set forth in claim 2, the friction clutch comprising upper and lower heads attached to the spindle, a friction disk interposed between and projecting radially beyond said heads; a drive shaft, and a member attached to said shaft and engaged with the projecting friction disk to rotate the latter.

4. In mechanism of the character specified having a printing member, a spindle carrying said member, and a drive shaft; a friction clutch comprising upper and lower collars non-rotatably attached to the spindle, a friction disk interposed between said collars and projecting radially beyond the adjacent collar and a cup attached to the drive shaft and surrounding the lower part of the clutch and having its upper end engaged with the projecting friction disk to rotate the latter.

5. In combination with mechanism as set forth in claim 4, a cup surrounding the said clutch mechanism, means for flooding the cup with lubricant during the operation of the machine to lubricate and cool the clutch.

6. In mechanism of the character specified the combination of a rotatable printer, an inking roller, and means for imparting rotation to the inking roller, said means permitting the inking roller to freely turn with the printer if the latter moves faster than the roller is driven.

7. In mechanism of the character specified, a rotatable printer, means for arresting the printer at each revolution thereof, means for releasing the printer; means for rotating the printer when released; an inking roller and means for imparting rotation to the inking roller in a direction opposite to the rotation of the printer, said mechanism permitting the inking roller to freely turn with the printer if the latter moves faster than the roller is driven.

8. In mechanism of the character specified, a rotatable printer, an inking roller adapted to coact with the printer, a roller for frictionally driving the inking roller, a continually driven shaft and clutch devices whereby said latter roller is driven from said shaft, said devices permitting the rollers to turn with the printer faster than the rollers are driven.

9. In mechanism of the character specified a rotatable printer, an inking roller adapted to coact with the printer, a roller for frictionally driving the inking roller, a continually driven shaft, clutch devices whereby the latter roller is driven from said shaft and drives the inking roller, said clutch devices permitting the rollers to turn

with the printer faster than the rollers are driven.

10. In mechanism of the character specified having a printer and, a spindle carrying said printer, a friction clutch for driving the spindle from the shaft, and means for circulating lubricant through the clutch to cool the same during the operation of the machine.

11. In mechanism of the character specified having an impression roller, a printer and, a spindle carrying said printer; a continuously running friction clutch, for driving the spindle from the shaft, and means for flooding the clutch with a lubricating and cooling fluid during the operation of the machine.

12. In mechanism of the character specified having a driven shaft adapted to be continuously revolved during the operation of the machine, and a die spindle alined with said shaft, and a friction clutch for driving the spindle from the shaft; a printer and stop arm formed integral with said spindle, for the purpose specified.

13. In mechanism of the character specified having a spindle, an impression roller and a printer mounted on said spindle, and a driven shaft adapted to be operated continuously when the mechanism is in operation; a friction clutch for driving the spindle from said shaft, and means for continually flooding the clutch with lubricant during the operation of the machine to keep the clutch cool.

14. In mechanism as set forth in claim 13, the friction clutch comprising upper and lower heads attached to the spindle, a friction disk interposed between and projecting radially beyond said heads; and a member attached to said driven shaft and engaged with the projecting friction disk to rotate the latter.

15. In mechanism as set forth in claim 13, the means for flooding the clutch with lubricant comprising a cup surrounding the clutch mechanism and a pump for continuously supplying the cup with lubricant during the operation of the machine.

In testimony that I claim the foregoing as my own, I affix my signature.

WALTER H. BOWES.