

March 4, 1924.

1,485,782

P. J. FISCHER

PERFORATING MACHINE

Filed Feb. 16, 1923

2 Sheets-Sheet 1

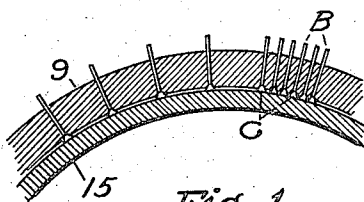


Fig. 1.

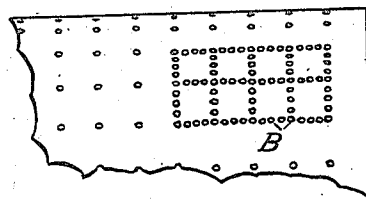


Fig. 2.

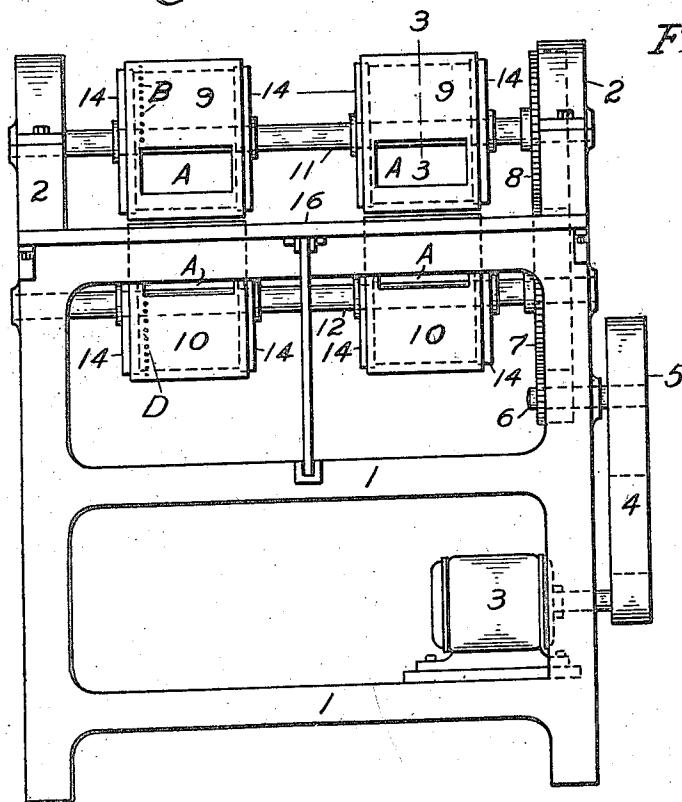


Fig. 3.

WITNESSES.

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2 Sheets-Sheet 2

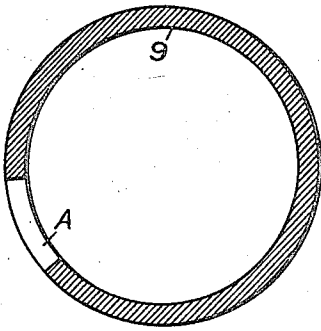


Fig. 4.

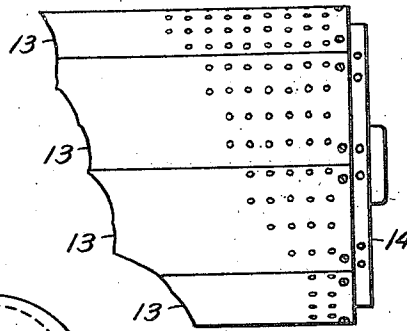


Fig. 5.

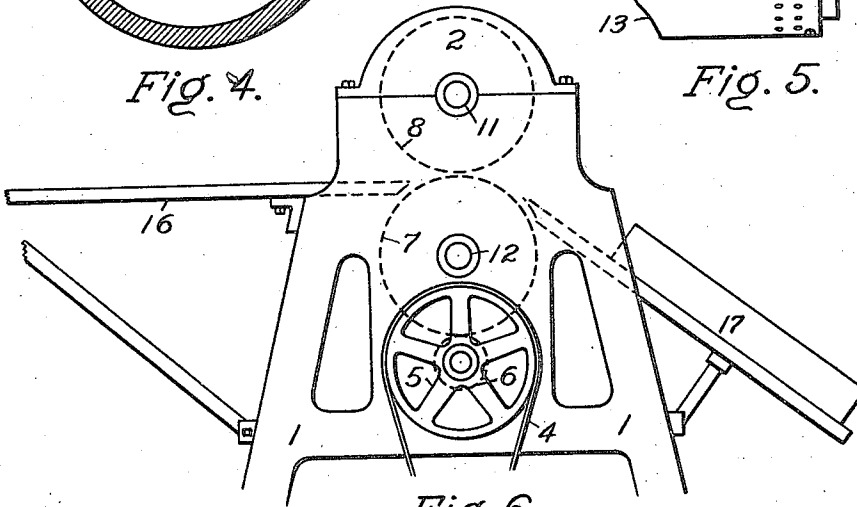


Fig. 6.

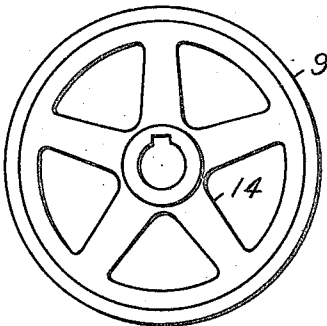


Fig. 7.

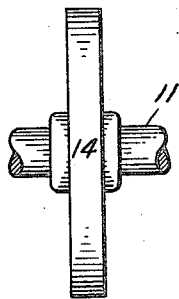


Fig. 8.

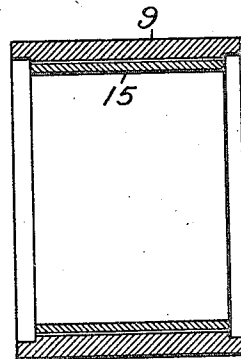


Fig. 9.

WITNESSES.

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UNITED STATES PATENT OFFICE.

PHILIP J. FISCHER, OF SCRANTON, PENNSYLVANIA.

PERFORATING MACHINE.

Application filed February 16, 1923. Serial No. 619,454.

To all whom it may concern:

Be it known that I, PHILIP J. FISCHER, citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Perforating Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in perforating machines and pertains more particularly to that type of machines employed to perforate stamps, coupons and checks and the like.

The primary object of the invention is to provide a perforating machine which is of the rotary type and which effects simultaneous longitudinal and lateral perforation of the sheets, to thereby not only increase the accuracy of the machine but to also enable same to produce superior work with an approximate saving of one-half of the time and operating expense incident to the operation of machines heretofore employed for the purpose.

Prior to the present invention, the general custom has been to employ rotary perforating machines wherein the sheets have been first fed through the machine and perforated in one direction and then in a second and distinct operation again fed through the machine and further perforated in a second direction. Flat bed machines with simultaneous longitudinal lateral perforating have also heretofore been employed, but same entail slow hand feeding, which is as objectionable as regard time and operating expense, as are the two distinct operations of the rotary machine.

The present invention therefore aims to overcome the aforementioned objections and further aims to provide a machine of this type which has improved means for mounting the needles in the drums or cylinders and has still further and other objects, which will be later set forth and manifested in the course of the following description.

In the drawings:—

Figure 1, is a fragmentary transverse sectional view on line 3—3 of Figure 3 of one of the cylinders, illustrating the manner of mounting the needles;

Figure 2, is a fragmentary plan view of one of the cylinders;

Figure 3, is a front elevation of the ma-

chine, with the central sections of the cylinders omitted;

Figure 4, is a transverse sectional view of one of the cylinders;

Figure 5, is a fragmentary plan view of a modified form of cylinder;

Figure 6, is a side elevation of the machine;

Figure 7, is an end elevation of one of the wheels of the cylinders;

Figure 8, is a front elevation of Figure 7, and

Figure 9, is a longitudinal sectional view of one of the cylinders.

In proceeding in accordance with the present invention, a suitable frame 1 is employed having removable heads 2 to permit of easy and convenient access to the drums or cylinders in assembly of the latter. Any suitable power means may be employed to drive the machine; for example an electric motor 3 may be used, which through belt 4 and pulley 5 drives a pinion 6, the latter meshing with a gear 7 keyed on lower shaft 12, the gear 7 in turn meshing with a gear 8 on upper shaft 11. The heads 2 form portions of the bearings for the upper shaft 11 so that upon removal of the heads, the shaft 11 and the cylinder thereon, may be bodily removed from the frame.

The perforating drums or cylinders 9 and 10 are each composed of a series of wheels 14 keyed or otherwise rigidly affixed to the upper and lower shafts 11 and 12 respectively, so as to rotate therewith and preferably one-piece bodies which are made or formed of integral lengths of tubing, as illustrated in Figure 2 of the drawings. However, as shown in Figure 5 of the drawings, the perforating cylinders may be formed of independent segmental sections 13, the ends of which are affixed, by suitable fastenings, such as screws, to the wheels 14, the latter in all forms of the invention, constituting heads for the drums or cylinders.

As illustrated in Figure 3, of the drawings, each complete perforating cylinder is formed of three sections, the end sections each having a pair of wheels 14, while the central section, not shown, has its ends secured to the adjacent or inner confronting wheels of the end sections. The perforating cylinders may also be provided with openings A, as shown in Figures 3 and 4, the

purpose of which is to facilitate the insertion of the needles or punches in the upper or male drum 9 and to allow the punchings to freely discharge from the lower or female drum 10.

The needles or punches B, as depicted in Figure 1, of the drawings, have heads C, the needles being projected through openings provided therefor in the male drum 9 and having their heads abutting the inner circumference of the drum. As illustrated in Figure 1, the inner circumference of the drum may be provided with grooves G' in which the needle heads are received, although this is not necessary. The heads C of the needles are engaged by a liner drum 15, which latter functions to hold the needle heads against movement interiorly of the drum, or in other words, acts to retain the needles in place on the drum.

In assembly of the perforating drums, the drums 9 are placed on end, and the needles inserted from the interiors thereof. In this regard it will be understood that the needles are arranged in accordance with the type of perforations which are to be formed in the sheet, i. e., whether stamps, coupons, or checks are to be perforated. Thus Figures 1 and 2 illustrate an arrangement of needles for perforating stamps, but in event of use of the machine for perforating checks, or coupons or the like, a variety of arrangements of the needles may be had to fit the particular requirements. After the needles are arranged as desired, the liner drum 15 is inserted within the outer drum 9, for which purpose the liner drum has a sliding fit within the outer drum. The wheels 14 are then placed within the ends of the outer drums and abut against the ends of the liner drums, holding the latter against axial movement, and finally the shaft 11 is inserted through the hubs of the wheels 14 and the shaft applied to the machine. The female drum 10 is provided with openings D to receive the punches or needles B during the punching or perforating actions of the needles.

As illustrated in Figures 3 and 6 of the drawings, a suitable feed table 16 is provided and upon which the sheets are placed and fed into the machine, while at the rear of the machine, an adjustable delivery table 17 is provided, which receives the perforated sheets and conveys the latter to any desired point or receiver.

The needles are disposed both longitudinally and transversely of the drums, consequently same effect simultaneous perforation of the stamps etc., in a single operation, but a single feeding of the sheets through the machine, being required.

It will, of course be understood that the machine is equipped with any customary form of guides which control or govern the

feeding of the sheets so that the latter will be fed into the machine and engaged by the needles at predetermined points on the circumference of the drum.

What is claimed is:—

1. In a perforating machine, a shaft having a pair of spaced wheels thereon, a main perforated tubular drum, the wheels engaging in the ends of the main drum, so as to support the latter, punches extending through the drum perforations and having heads disposed interiorly of the drum, and a tubular liner drum in the main drum engaging the punch heads and having its ends abutting the inner faces of the wheels so as to be held against axial movement thereby.

2. In a perforating machine, a shaft, two pairs of wheels on the shaft, the wheels of each pair being spaced and the pairs themselves being likewise spaced, main perforated tubular drums disposed in the spaces between the wheels of the pairs and in the space between the pairs and engaged over the peripheries of the pairs of wheels, and over the adjacent wheels of the pairs whereby said adjacent wheels conjointly support the said main drum disposed in the space between the pairs of wheels, punches extending through the drum perforations and having heads disposed interiorly of the drums, and a liner drum for each main drum, the liner drums being disposed in the spaces between the wheels of the pairs and in the space between the pairs and engaging the punch heads and side faces of the wheels so as to be held against axial movement by the wheels.

3. In a perforating machine, a shaft having a pair of spaced wheels thereon, a main perforated tubular drum, the wheels engaging in the ends of the main drum, so as to support the latter, punches extending through the drum perforations and having heads disposed interiorly of the drum, and a tubular liner drum in the main drum engaging the punch heads and having its ends abutting the inner faces of the wheels so as to be held against axial movement thereby, said main drum having an opening between its ends of a size to permit the punches to be manually positioned from the interior thereof.

4. In a perforating machine, a drum having perforations extending throughout its length and circumference, heads for the respective ends of the drum, punches extending through the perforations and having heads engaging the inner circumference of the drum, and a liner for the drum engaging the punch heads, said drum being tubular so as to allow the punches to be selectively positioned through various perforations so as to effect simultaneous perforation of material in different directions.

5. In a perforating machine, a drum having perforations extending throughout its length and circumference, heads for the respective ends of the drum, punches extending through the perforations and having heads engaging the inner circumference of the drum, and a liner for the drum engaging the punch heads, said drum having an opening of a size to permit the punches to be selectively positioned through various perforations from the interior of the drum and at points between its ends. 15

tions extending throughout its length and circumference, punches selectively engageable through the perforations, and means to hold the punches in operative position, the perforations being closely related and arranged so as to enable the punches to be set for perforating of the stamps simultaneously along each end and side thereof to form tearing lines, and to also permit setting of the punches to perforate sheets for stamps of different sizes. 20

In testimony whereof I affix my signature. 25

6. A machine for perforating stamps and the like including a drum having perfora-

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