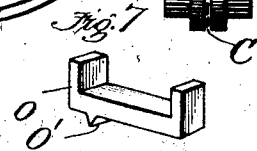
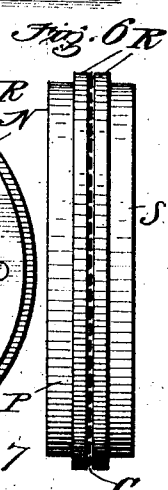
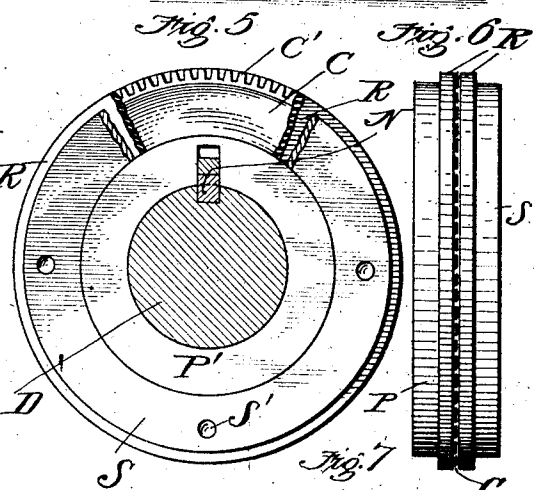
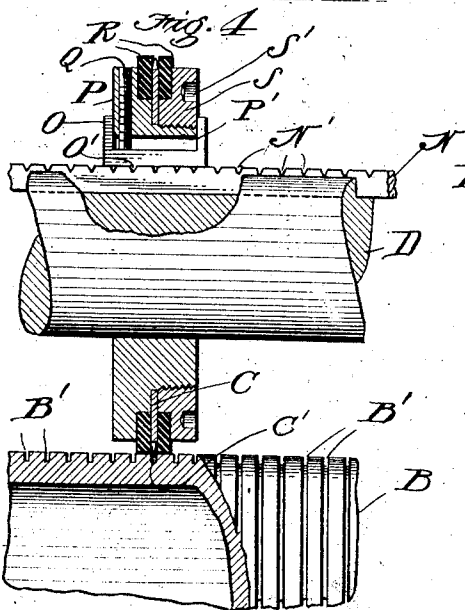
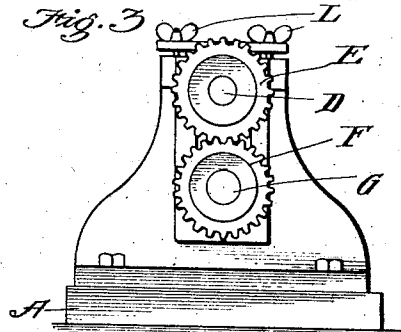
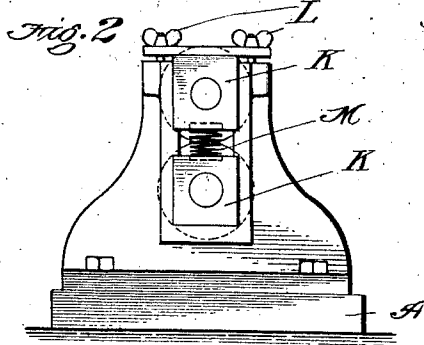
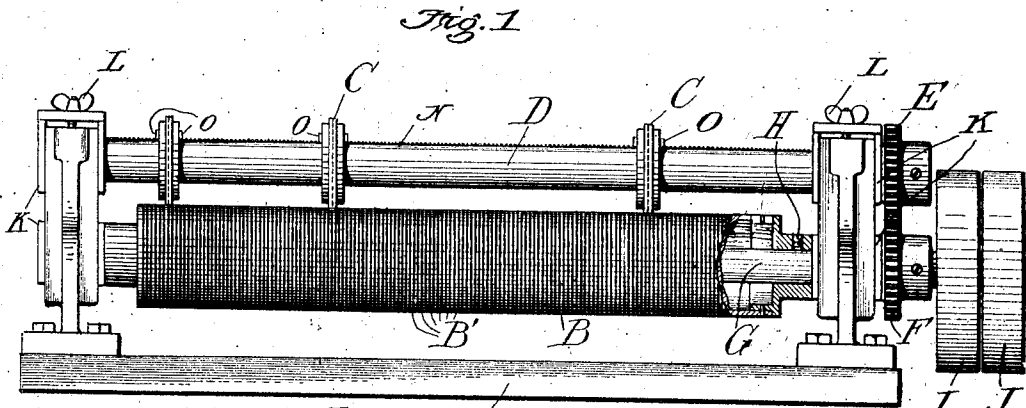


S. D. STURGIS.
PERFORATING MACHINE.
APPLICATION FILED JAN. 10, 1906.



Witnesses
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UNITED STATES PATENT OFFICE

SAMUEL D. STURGIS, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE
HALF TO JOSEPH Y. BARUH, OF LOS ANGELES, CALIFORNIA.

PERFORATING-MACHINE.

No. 838,147.

Specification of Letters Patent.

Patented Dec. 11, 1906.

Application filed January 10, 1906. Serial No. 295,476.

To all whom it may concern:

Be it known that I, SAMUEL D. STURGIS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Perforating-Machines, of which the following is a specification.

My invention relates more particularly to perforating-machines used by printers in which large quantities of paper are perforated.

The objects of my invention are to provide a simple and easily-operated device which will automatically feed the paper to the perforator and remove it therefrom without employing additional means therefor and which will hold the paper to be perforated on either side of the perforating-knife tightly against the drum on which the paper is fed to the knives, and thereby prevent it from slipping when the same is being perforated, and thereby prevent the grooves in the drum from becoming filled with paper.

I accomplish these objects by the means described herein and shown in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved perforating-machine, partly in section. Figs. 2 and 3 are end views of my machine, the driving-pulleys being removed therefrom. Fig. 4 is an enlarged fragmentary detail, partly in elevation and partly in section. Fig. 5 is a side elevation of the perforating or cutting disk, partly shown with one of the annular rubber disks and holding-ring partly broken away. Fig. 6 is an edge view of the perforating-disk with the annular rubber rings on either side thereof. Fig. 7 is a perspective view of the cutter-holding key.

In the drawings I have not shown the usual table or platform upon which the device is mounted nor the surface on which the paper is fed to the perforator, as the same constitutes no part of my invention.

In the drawings, A represents the frame of the device, in which the device is secured, which consists principally of a hollow drum B, carrying on the periphery thereof a plurality of annular grooves B' for the reception of the cutting edge of the perforating-knife C. This cutting knife or disk is adjustably mounted on the counter-shaft D, to which motion is imparted through the spur-gears E

and F, mounted, respectively, on the counter-shaft and the projecting end of the shaft G, which projects through the grooved drum B and to which the drum is keyed by the set-screw H. On the projecting end of this shaft is keyed the driving-pulley I, and adjacent thereto is loosely mounted the pulley J, by means of which motion is thrown onto or removed from the machine. These shafts are revolubly mounted in the bearing-blocks K and are adjustable therein by the thumb-nuts L. Coiled springs M (shown in Fig. 2) will hold the drum and counter-shaft firmly in their bearings the properly adjusted distance apart. The counter-shaft has a longitudinal key-seat for the reception of spacing-bar N. This bar has recesses N' in the outwardly-projecting edge thereof, the purpose of which is to receive the downwardly-projecting lug O' on the adjusting-key O. These keys, one for each cutting-disk, are placed in position within the annular ring P and are held down into engagement with the spacing-bar N by means of the set-screw Q, Fig. 4, and afford means to properly adjust the disks on the counter-shaft. Any number of these perforating-knives may be placed upon the counter-shaft. They are put in place on the annular ring P by means of the annular securing-ring S, which is internally screw-threaded and adapted for screw-threaded engagement on the screw-threaded hub P' on the annular ring P. In assembling together the annular ring with the rubber bands and the cutting-disk (shown in Fig. 4) a rubber band is first placed on the ring P, an annular shoulder being placed on the ring therefor, after which the cutting-disk is placed thereon. The companion rubber ring is then placed on an offset or shoulder on the securing-ring S, when the securing-ring with the rubber ring in place thereon is screwed onto the hub of the annular ring P and will securely hold the rubber bands and the cutting-knife in place on the hub on the annular ring P. The securing-ring has indentations S' therein, forming sockets for a spanner-wrench, by which the same may be tightly screwed on the annular ring P.

In Figs. 5 and 6 I have shown the perforating-knife in enlarged detail, on each side of which is placed a rubber ring R, which rings in their normal position extend outwardly and beyond the cutting edges of the perfo-

rating-knife. The perforating-knife carries upon the periphery thereof a series of perforating or cutting edges C'. These cutting edges when in their normal position lie inside the plane of the outer peripheries of the annular rubber bands and are protected there-
 5 by except as to that portion of the cutting edges immediately above the grooved drum, at which point the edges of the knife project
 10 downwardly beyond the edges of the rubber bands and into the grooves B' of the drum and perforate the paper. These grooves are just wide enough to permit the entrance
 15 thereto of the cutting edges. That portion of the rubber bands on both sides of the cutting edges will contact with the grooved drum and will be pressed backwardly by the drum, permitting the cutting edges to enter
 20 into the groove and prevent any of the paper from entering therein. When the paper to be perforated is inserted between the grooved drum and the counter-shaft, it will first be gripped by the outwardly-projecting edges
 25 of the annular rubber bands and will, when motion is imparted to the machine, be drawn therebetween and will be held in tight frictional contact between the rubber bands and the drum, and the cutting edges of the knife
 30 will perforate the same. As it passes out from under the counter-shaft the resiliency of the rubber bands thereon will remove the paper from the cutting edges of the knife and cause the perforated sheet to move freely
 35 away from the counter-shaft without any other device to accomplish this end.

A perforating-machine will work satisfactorily with a resilient substance on one side of the perforating disk or knife with some kind of paper; but to adapt the machine for
 40 use with all kinds of paper I prefer to equip the same with a resilient substance on both sides of the perforator.

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

1. A perforating-machine comprising a revoluble drum having circumferential grooves therein and a counter-shaft having perforators thereon and rubber rings in contact with the perforators and projecting be-
 50 yond the periphery thereof, and adapted to engage the solid portions of the drum on each side of a groove in advance of the perforators, whereby pressure upon the rubber rings is necessary in order to permit the per-
 55 forating means to accomplish its work of perforating the paper held taut across the groove by the rubber rings.

2. A perforating-machine comprising a revoluble drum having circumferential
 50 grooves therein and a counter-shaft, perforators carried by the counter-shaft and the counter-shaft provided with means corresponding to the several grooves of the drum whereby to gage the adjustment of the per-
 65 forators so that they always occupy a plane in alinement with a groove in the drum.

3. In a perforating-machine of the character herein described provided with a rotating drum having annular grooves thereon, a
 70 counter-shaft for carrying the cutting-disks having a longitudinal key-seat therein, a spacing-bar in said seat and having spacing-recesses therein in combination with a key having a lug adapted for adjustable engage-
 75 ment on the spacing-bar.

4. The combination in a perforating-machine of a rotary drum having annular grooves thereon, a counter-shaft workably connected therewith carrying perforating-knives there-
 80 on and having means to adjust the knives in line with the grooves on the annular drum.

In witness that I claim the foregoing I have hereunto subscribed my name this 3d day of January, 1906.

SAMUEL D. STURGIS.

Witnesses:

HENRY T. HAZARD.
 G. E. HARPHAM.