E. PICKERING.

RECORDER.

APPLICATION FILED NOV. 11, 1915.

1,282,125.

Patented Oct. 22, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

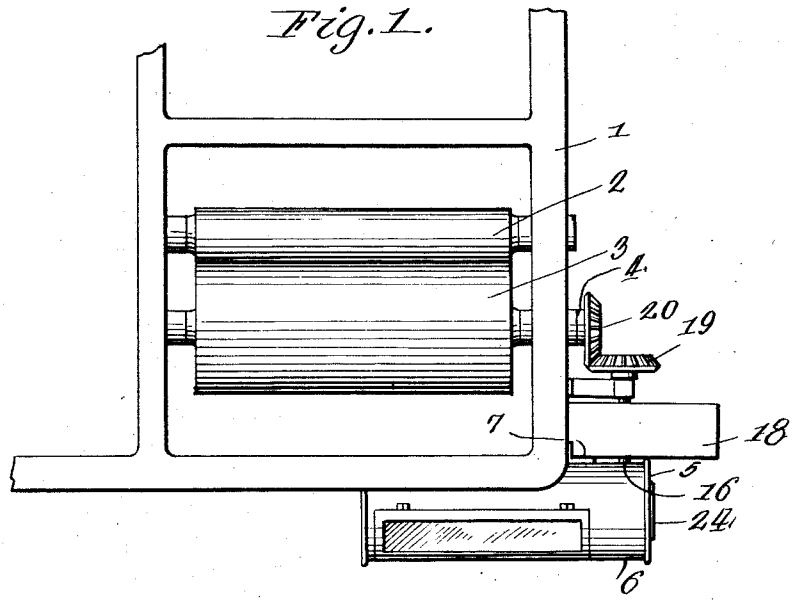
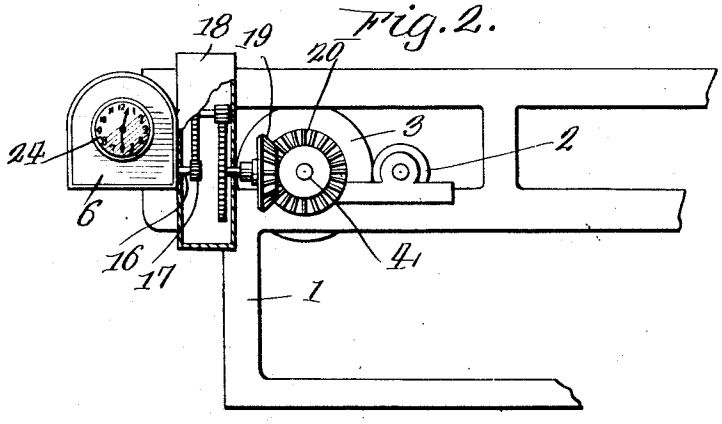


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

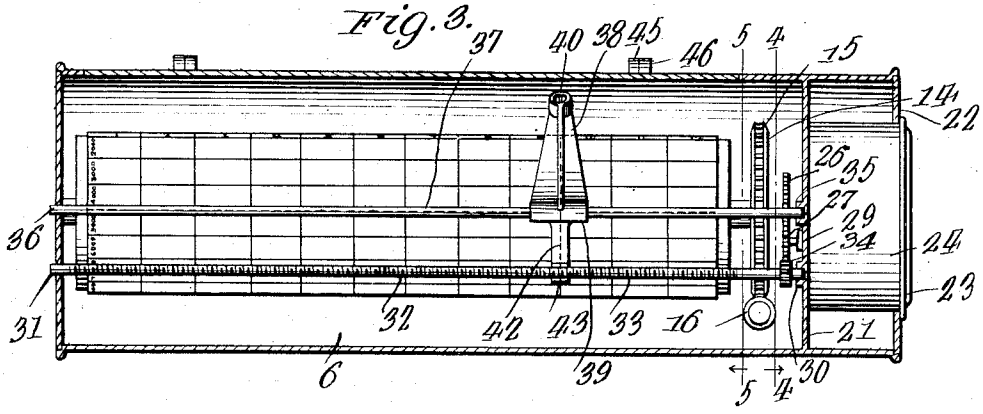


Fig. 4.

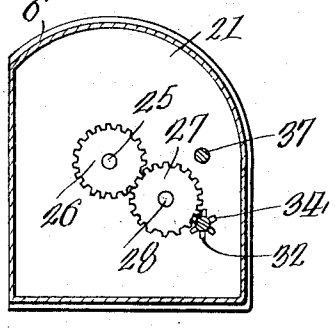
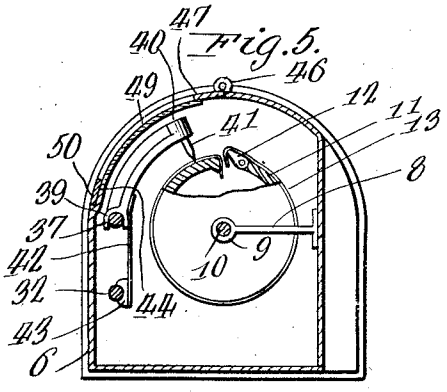


Fig. 5.



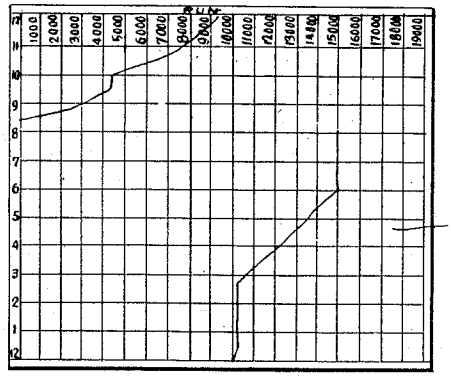


Fig. 6.

13

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UNITED STATES PATENT OFFICE.

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RECORDER.

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Application filed November 11, 1915. Serial No. 60,912.

To all whom it may concern:

Be it known that I, EDWARD PICKERING, a subject of the King of England, who has declared his intention to become a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Recorders, of which the following is a specification.

My invention relates to recorders and more particularly to a printing press recorder.

The primary object of my invention resides in the provision of a novel recording means for association with a printing press or other analogous machine for recording the number of papers printed on any predetermined run, as well as to record the number of stops made by the printing press and the length of time of a stop or stops.

Another object of this invention resides in the provision of a novel means associated with the folding cylinder of a printing press for receiving the record sheet, speed reducing means being interposed between the folding cylinder and the record sheet holding means for regulating the speed of the record sheet holding means so that this means will revolve once to any predetermined number of revolutions of the folding cylinder of the press.

A further object of my invention resides in the provision of a novel inking means coacting with the record sheet holding means, the inking means being operated through the medium of suitable clock mechanism and arranged with the clock mechanism so that the inking means will travel the entire width of the record sheet holding means while the latter is revolving once thereby indicating on the record sheet the exact number of papers printed in a certain time as well as indicating the number of stops and the length of duration of the stop or stops.

A still further object of my invention resides in the provision of novel means for maintaining the inking means in intimate contact with the record sheet and for facilitating the movement of the inking means across the record sheet while the latter is rotating.

A still further object of my invention resides in the construction of the novel casing in which the recorder proper is mounted, said casing being provided with a sight whereby the record made by the press may be readily seen from the exterior without interfering with any of the parts, the sight being movable to permit of access within the casing to allow for the application or removal of the record sheet and to adjust the inking device when a subsequent operation of the recorder is desired.

A still further object of my invention resides in the provision of a device of the character described that is simple in construction, efficient in operation and one that can be manufactured and placed on the market at a minimum cost.

Other objects as well as the nature, characteristic features and scope of my invention will be more readily understood from the following description taken in connection with the accompanying drawings and pointed out in the claims forming a part of this specification.

In the drawings:—

Figure 1 is a top plan view of my invention associated with a portion of a printing press frame;

Fig. 2 is a side elevational view of the same;

Fig. 3 is an enlarged longitudinal sectional view of the casing illustrating to advantage the recording mechanism;

Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 3 in the direction in which the arrow points, advantageously illustrating the construction and arrangement of the speed controlling means of the screw-threaded shaft on which is associated the inking device;

Fig. 5 is a transverse sectional view of my invention taken on the line 5—5 of Fig. 3 in the direction in which the arrow points, showing the arrangement of the record sheet holding cylinder and the inking means, the cylinder being broken away to illustrate the construction of the sheet lock; and

Fig. 6 is a top plan view of one of the recording sheets, the zig-zag lines illustrating the number of papers printed in a given time as well as the stops made by the press in that time.

Referring more particularly to the drawings in which similar reference numerals designate like or corresponding parts throughout the different views, I have associated with a portion of a printing press frame 1 adjacent the rotatably mounted cutting roll 2 and the rotatably mounted folding cylinder 3 carried by the shaft 4, my

improved recorder, generally designated by the numeral 5. It is to be understood that the printing press is not absolutely essential to the invention, it being obvious that the recording mechanism can be associated with analogous machines.

The improved recorder in this instance consists essentially of a metallic casing 6 having a curved upper edge, the one side of the casing being cut away to conform with the frame of a printing press as illustrated to advantage in Fig. 1 of the drawings, the casing being secured to the frame by a suitable supporting bracket 7. Secured to and extending laterally from the inner wall of one side of the casing, adjacent the respective ends thereof are suitable supporting brackets 8, the outer ends of which terminate in journal bearings 9 for rotatably receiving a shaft 10, the latter having a record sheet holding cylinder 11 rigidly associated therewith. The cylinder is provided with a longitudinal slot, to one side of which is pivoted a sheet lock 12 for engagement with one end of a record sheet 13. The sheet is wrapped about the roller and has its free end extended in the slot where it is suitably and removably clamped through the medium of the lock 12, when the lock is pressed downwardly into substantial circumferential alinement with the cylinder. Rigidly carried by one projecting end of the shaft is a worm wheel 14, the teeth 15 of which are arranged in mesh with a transversely projecting worm 16, said worm being transversely mounted in an opening in the inner side wall of the casing. The opposite end of the worm shaft 16 is arranged in mesh with a gear 17 forming one of a suitable train of gears within the gear casing 18, a beveled gear 19 projecting from the opposite side of the casing being arranged in mesh with a similarly constructed bevel gear 20 carried by the shaft 4 which carries the folding cylinder. It is desirable that the recording cylinder be geared at a ratio, for example, of 128 to 1, that is, the pitch diameter of the worm wheel is 4″ and at a pitch diametral of 32 will give 128 teeth, while the worm shaft has only a lead of one, therefore making a ratio of 128 to 1. Assuming that the average run of the press is 20,000 papers or 20,000 revolutions to the folding cylinder, it is understood that the gears 20 and 19 and the gears 17 within the casing 18 will reduce the speed transmitted from the shaft 4 to the worm shafts 16 from 20,000 to 128 revolutions in order that the record sheet holding cylinder 11 will revolve once while the sheet 4, which carries the folding cylinder, revolves 20,000 times in a certain time, preferably twelve hours.

Mounted within the casing and associated with the record sheet on the cylinder 11 is my improved inking device. In arranging the inking device, I have provided a partition 21 adjacent one end of the casing, the outer end 22 of the casing adjacent the partition being provided with a circular opening 23 in which is disposed a clock 24, the projecting end of the clock shaft 25 being rotatably arranged through the partition 21 in order that a gear 26 may be rigidly secured thereto. Another gear 27 is rigidly carried by a stud shaft 28 rotatably mounted in a bearing 29 formed integral with the partitions. Rotatably mounted in a bearing 30 on the partition 21 and in an opening 31 in the opposite end of the casing is a longitudinally disposed shaft 32, said shaft being provided approximately throughout its entire length with screw threads 33 for a purpose to be hereinafter described. A pinion 34 is rigidly carried by the shaft 32 adjacent the bearing 30 and is arranged in mesh with the gear 27 for forming with the gears 27 and 26 a train for reducing the speed of the clock shaft 25 from which rotary motion is imparted to the shaft 32 for a purpose to be hereinafter referred to. A bearing 35 and an opening 36 are formed in the partition in the rear end of the casing respectively directly above the bearing 30 in the opening 31 so that a rigidly mounted shaft 37 will be disposed directly above the shaft 32. Slidably mounted on the shaft 37 is an inking element generally designated 38. This element comprises an arcuate body having a bifurcated end 39 slidably disposed about the shaft 37, the opposite end of the body having a container 40 formed thereon for receiving a quantity of ink, the bottom of the container being in communication with a point 41 which projects from the under surface of the body and is arranged to contact with the record sheet cylinder 11, engagement of the point with the sheet being facilitated and sliding movement of the inking element 38, had through the medium of a novel resilient element, preferably a leaf spring 42. The free end of the spring bears against the lower under surface of the inking element, the opposite end having a semicircular body 43 secured thereto and arranged in screw-threaded engagement with the threads 33 of the shaft 32 in order that the inking element may be moved transversely across the record sheet while the shaft 32 is in operation. It is to be understood that the shaft 32 is in rotatable movement with the clock shaft 25 and that the threads 32 are arranged at a pitch so that the semicircular body 43 will travel one inch to the right every hour. More specifically the record sheets 13 are provided with twelve lines indicating the number of hours and with twenty lines intersecting the twelve lines at right angles, the spaces between the twenty lines each representing 1,000 papers or revolutions of the folding

cylinder, the record sheet being applied so that the hour lines are arranged longitudinally of the cylinder 11. The spaces between the hour lines will be one inch so that every hour, the point 41 will traverse one inch on the record sheet. Of course, as the cylinder revolves the inking point will also make a longitudinal mark on the cylinder so that the line made will be slanting, assuming that the shaft 32 and the cylinder are rotating, thus indicating the number of papers turned out by the press in one hour. If the press should stop, the inking point will make a straight line on the cylinder indicating the duration of the stop.

In order that the record shaft may be viewed from the exterior of the casing 6 while the press is in operation and in order that access may be had to the interior of the casing when it is desired to adjust the inking element 38 and the record sheet on the cylinder 11, I have provided my improved movable sight. In this instance the outer curved surface of the casing is provided with an opening 44, said opening being rectangular in plan and of a length approximately similar to the length of the cylinder. The upper longitudinal side of the opening is provided at uniformly spaced intervals with ears 45 to which are pivotally connected similarly formed ears 46 carried by an arcuate door 47, the door itself being provided with a rectangular opening 48 which is incidentally also of a length practically similar to the length of the cylinder 11, a sight 49 being secured to the under surface of the door so that the record sheet may be visible from the exterior of the casing while the printing press and recorder are in operation. The lower side edge of the opening is provided with a seat 50 for receiving the door.

The operation of my invention is as follows:

Assuming that the folding cylinder 3 is making 20,000 revolutions and turning out 20,000 papers in twelve hours as an average run, the gear 20 carried by the shaft 4 is making a similar number of revolutions. Movement is imparted from the gear 20 to the gear 19 and thence through the chain of gears 17 and casing 18 where the speed is reduced from 20,000 revolutions, preferably to 128 revolutions, this number of revolutions being made by the worm shaft 16, which is arranged in mesh with the worm wheel 15, the latter being geared at a ratio of 128 to 1 so that the folding cylinder will revolve 20,000 times while the cylinder 11, which has the worm wheel associated therewith, revolves once. During this movement the screw-threaded shaft 32 is rotated through the medium of the pinion 34 and gears 27 and 26, the latter being carried by the clock shaft. The inking element 34 slidably mounted on the stationary shaft 27 is slid through the medium of the resilient element which is incidentally operated by the screw-threaded shaft 32. The inking device is arranged so that it will move one inch to the right every hour. As the record sheet holding cylinder 11 revolves and as the inking device is slid to the right the diagonal line made on the record holding sheet by the point 34 indicates the number of papers turned out by the press in a certain time.

Although I have shown and described the preferred embodiment of my invention, I desire to be understood that I am not to be limited to the exact details shown; however, I desire that great stress be laid upon the provision of the novel record sheet holding cylinder having the inking device coöperating therewith for recording the number of papers turned out by a press as well as the stops made by the press during the course of twelve hours. It is to be understood that minor changes can be made, such as changing the lines on the record sheet as well as the gears in the casing and those for imparting speed from the clock to the screw-threaded shaft as well as the pitch of the threads on the shaft and on the worm wheel without departing from the spirit of the invention.

From the above description taken in connection with the accompanying drawings, it can easily be seen that I have provided a device that is simple in construction, containing but a few simple parts that can be cheaply manufactured and assembled and when assembled can be placed upon the market and sold at a minimum cost.

It will be understood that the above description and accompanying drawings comprehend only the preferred embodiment of my invention and that various minor changes in detail of construction, proportion and arrangement of the parts may be made within the scope of the appended claims and without sacrificing any of the advantages of my invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A recorder of the kind described comprising, a rotatably mounted cylinder adapted to receive a replaceable record sheet, a reducing gearing connected with the cylinder and adapted to be actuated by a rotatable member of a machine for rotating the cylinder, a rod arranged adjacent the cylinder and substantially parallel with the axis thereof, a carriage slidably mounted on the rod and carrying a pencil for constant engagement with the surface of the cylinder, a threaded rod arranged parallel to and below said first rod, a clock mechanism in connection with said threaded rod

for rotating it, a second carriage carrying a half nut for threaded engagement with said threaded rod, and a resilient connection between said first and second carriages.

2. A recorder of the kind described comprising a casing for attachment to a machine, a cylinder rotatably mounted in the casing and having an operative connection with an operating member on the machine and adapted to receive a record sheet thereon, a rod disposed in the casing and arranged substantially parallel to the axis of the cylinder, a carriage slidably mounted on said rod having a curved arm carrying at its free end a stylus for constant engagement with the surface of said cylinder, an ink container on the carriage and having communication with said stylus, a threaded rod rotatably mounted in the casing and arranged substantially parallel to and below said first rod, a second carriage employing a half nut for threaded engagement with said second rod and having a leaf spring connection with said first mentioned carriage, and a clock mechanism for rotating said second and threaded rod.

3. A recorder of the kind described comprising a casing for attachment to a machine, a cylinder rotatably mounted in the casing and having an operative connection with an operating part of the machine whereby the cylinder is rotated, said cylinder being adapted to receive a record sheet thereon, a rod disposed at one side of the cylinder and arranged to extend substantially parallel with the axis thereof, a member having one end formed with a semi-circular groove for slidably mounting said member on said rod and carrying a stylus on the other end thereof for constant engagement with the surface of the cylinder, a rotatably mounted threaded rod disposed immediately below and parallel to the first rod, a carriage in threaded engagement with the threaded rod, a leaf spring for resiliently connecting said carriage to said member, and a clock mechanism for rotating said threaded rod.

4. A recorder of the kind described comprising a casing for attachment to a machine, a cylinder rotatably mounted in the casing and adapted to receive thereon a record sheet, a gear rigid with the axis of the cylinder, a second casing secured to the first casing and having a reducing gearing rotatably mounted therein, a shaft extended between said two casings and having a worm thereon to mesh with the worm wheel of said cylinder and having the other end in operative connection with said gear train, means for operatively connecting said gear train with an operating member of the machine, a rod disposed in the first casing and arranged substantially parallel with the axis of the cylinder, a detachable U-shaped carriage slidably mounted on the rod and carrying a stylus for constant engagement with the surface of the cylinder, a threaded rod rotatably mounted in said first casing, a carriage in threaded engagement with said threaded rod and having connection with said first mentioned carriage, and a clock mechanism disposed at one end of the first casing and having operative connection with said threaded rod whereby it is actuated to move said stylus longitudinally with respect to the surface of the cylinder.

5. A recorder, which comprises a record cylinder having a replaceable sheet thereon, means for connecting the cylinder for driving the same, a substantially stationary cylindrical rod, a U-shaped guide slidable thereon, said guide having an arcuate arm extending upwardly therefrom, the arm being provided at its outer end with a marking device that is adapted to have continuous contact with the upper quadrant of the sheet and cylinder, a lead screw placed below and parallel to the rod, a leaf spring having one end connected to the under side of the guide arm, and its other end provided with a half-nut adapted to engage with one side of the screw, said arm being adapted for rotation for lifting the stylus, disconnecting the half-nut and providing for the immediate removal of said arm, guide, stylus, leaf spring, and half-nut as a unit.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD PICKERING.

Witnesses:
P. M. BRUNER,
M. E. BRUNER.