S. J. KUBEL.

FEED GAGE FOR PRINTING PRESSES.

APPLICATION FILED JUNE 10, 1912.

1,077,284.

Patented Nov. 4, 1913.

2 SHEETS—SHEET 1.

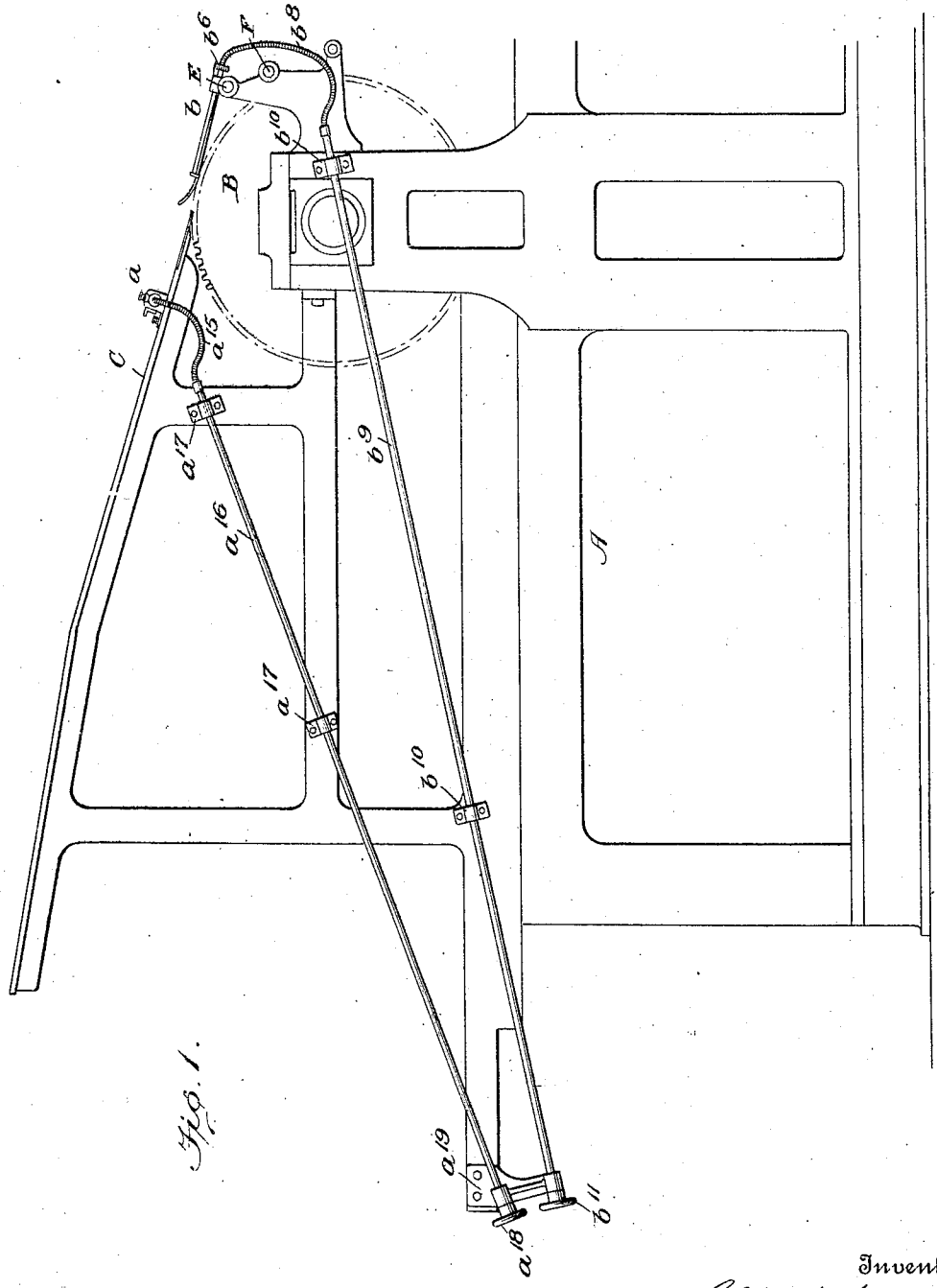


Fig. 1.

Witnesses

Edwin L. Bradford

Inventor

S. J. Kubel

By Lemuel Goldsborough & Neill

Attorneys

S. J. KUBEL.

FEED GAGE FOR PRINTING PRESSES.

APPLICATION FILED JUNE 10, 1912.

1,077,284.

Patented Nov. 4, 1913.

2 SHEETS—SHEET 2.

Fig. 2.

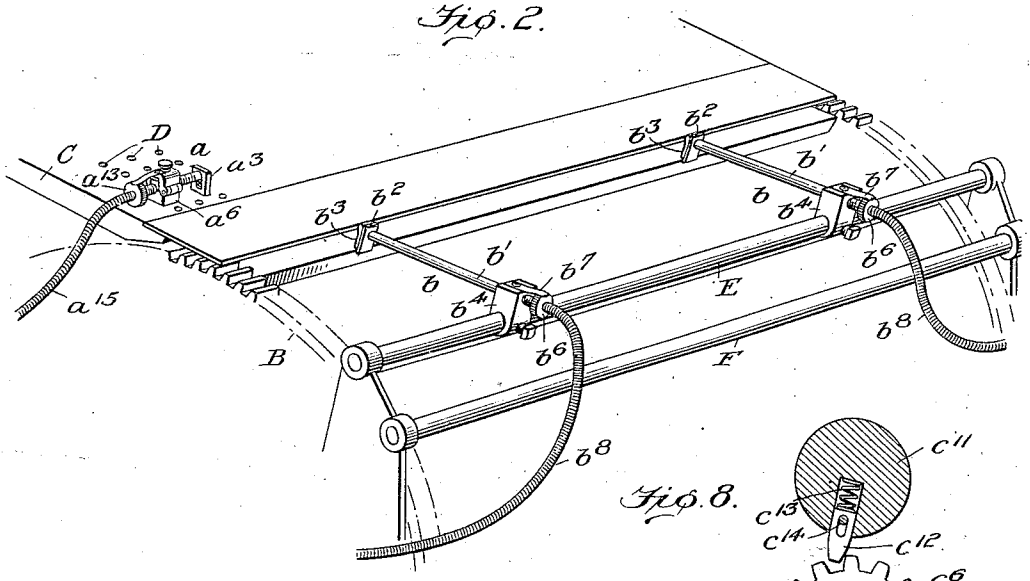


Fig. 8.

Fig. 3.

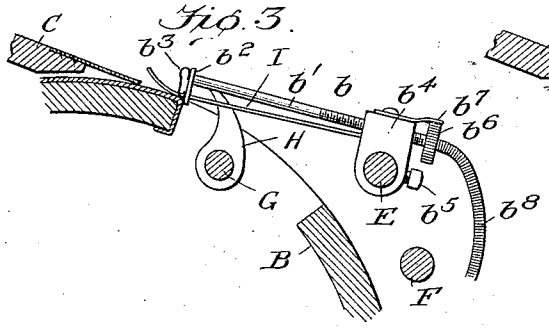


Fig. 7.

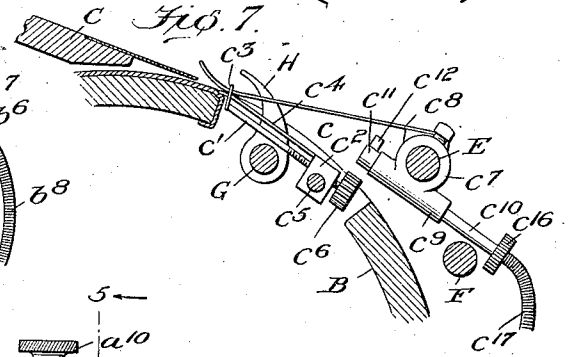


Fig. 4.

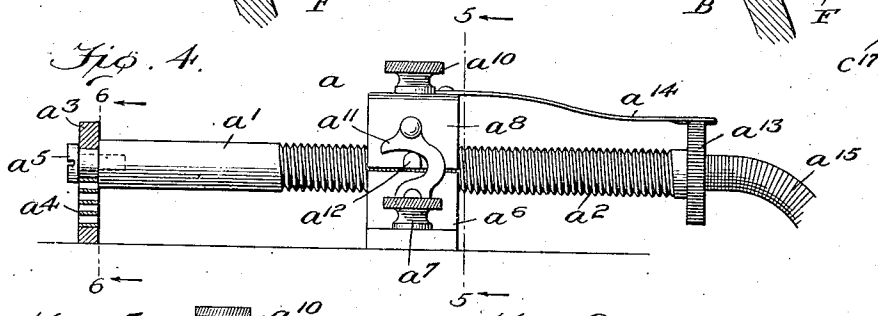


Fig. 5.

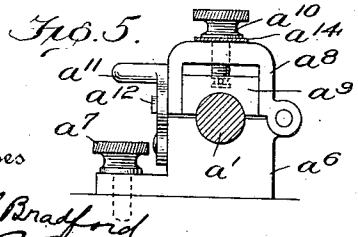
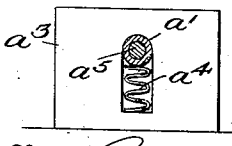


Fig. 6.



Witnesses

Edwin L. Bradford

Inventor

S. J. Kubel

By Lemuel Goldsborough & O'Neill

Attorneys

UNITED STATES PATENT OFFICE.

STEPHEN J. KUBEL, OF WASHINGTON, DISTRICT OF COLUMBIA.

FEED-GAGE FOR PRINTING-PRESSES.

1,077,284. Specification of Letters Patent. Patented Nov. 4, 1913.

Application filed June 10, 1912. Serial No. 702,760.

To all whom it may concern:

Be it known that I, STEPHEN J. KUBEL, a citizen of the United States, residing in the city of Washington, District of Columbia, have invented certain new and useful Improvements in Feed-Gages for Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of the invention is to provide means for effecting and controlling the adjustment of feed gage mechanism for printing presses from a position usually occupied by the pressman, and therefore remote from the position of the gage mechanism.

In many types of printing presses more particularly the stop cylinder type, it is customary to employ gage mechanism to accurately define the position of the sheets of paper to be printed by means of at least three adjustable gages, one of which is usually located on the feed board and at least two of which are located on, or above the cylinder which carries the paper over the printing surface. In multiple impression printing, such as lithographic color work, map printing and the like, absolutely accurate registry of the successive impressions is essential, and in order to effect such registry, a very careful adjustment of all the feed gages of the press must be made by the operator. It not infrequently occurs that adjustment of the gages must be effected from time to time during the progress of work, but in all cases the gages must be accurately set before a given piece of work is run through the press.

As heretofore constructed, both the side gage usually carried by the feed board and the end gages carried by or adjacent to and in coöperative relation with the cylinder have been constructed so that they may be moved from one place to another on the press to accommodate sheets of different size and have also been capable of adjustment *in situ* to admit of the portions of the gages which engage the paper being accurately positioned to bring each and every impression imparted to the paper in exact registry. As heretofore practiced, the adjustment of the gages was effected by the operator stopping the press, leaving his position and setting the gages manually and tentatively, after which he returned to his position, started the press and observed the effect of the succeeding impression to ascertain the effect of the adjustment. If the first adjustment was not correct, the operation had to be repeated until an absolutely accurate adjustment was obtained, which would be evidenced by a perfect registry of the superposed impressions on the printed sheet.

The object of the present invention is to provide means by which the adjustment of all of the gages may be effected by the operator from his position at the delivery end of the press while observing the printed sheets delivered, without stopping the press, if the several gages are located outside of the cylinder, and requiring a mere momentary stopping of the press if the end gages are located in or on the cylinder, thereby saving considerable time and avoiding the necessity of running many trial sheets through the press before final and accurate adjustment of the gages is effected, which were difficulties and objections inherent in the former mode of adjustment of the gages.

The invention is illustrated in the accompanying drawings, in which,

Figure 1 is a side elevation of a portion of a stop cylinder press embodying the invention. Fig. 2 is an enlarged fragmentary perspective view of the press shown in Fig. 1. Fig. 3 is a fragmentary sectional view illustrating one of the end gages. Fig. 4 is an enlarged detail view, partly in section, of one of the side gages. Fig. 5 is a vertical section on line 5—5 of Fig. 4. Fig. 6 is a section on line 6—6 of Fig. 4. Fig. 7 is a view corresponding to Fig. 3, showing the invention applied to an end gage mounted on or in the cylinder. Fig. 8 is an enlarged detail sectional view of the means for operating the gage shown in Fig. 7.

While the invention is illustrated as applied to the standard stop cylinder press, it will be understood that such illustration is merely exemplary, and that the invention is adapted to presses of other types which involve the use of adjustable feed gages.

Referring to the drawings, A indicates the frame of the standard press having mounted therein the rotary cylinder B to which the paper is fed from a feed board C. The feed board C, on the side opposite that of the feeding operator is provided with a series of holes D arranged in transverse and longitudinal rows to permit the side gage ordi-

narily employed in a press of this kind to be adjusted to various positions on said feed board according to the size and character of the paper used. The side gage a may be of any appropriate type, and in the form indicated, comprises a spindle a' provided with a threaded section a^2 to the forward end of which is swiveled gage plate a^3 by means of a set screw a^5 tapped into the end of the spindle a'. In order to hold the gage plate firmly against the surface of the feed board, a spring a^4 is located in a slot in the gage plate and bearing between the lower edge of the slot and the set screw a^5. The spindle is mounted in a bearing block a^6, which is adapted to be clamped to the feed board C in any desired position by means of the set screw a^7, the threaded end of which engages one of the tapped holes D in the feed board. The bearing block is provided with a hinged cap a^8 which carries an adjustable block section a^9 which can be moved up and down in the cap a^8 by means of a set screw a^{10} to regulate the tension between the block section a^9 and the threaded portion a^2 of the spindle a'. The hinged cap is held in coöperative relation with the base portion of the block by means of a cam latch a^{11} pivoted to the said lower block section and engaging with a lug a^{12} on the cap section. By releasing the cam latch, the cap section may be swung back and the gage spindle moved to any desired extent in the bearing a^6 for preliminary and rough adjustments. When the cap section a^8 is located in position, the finer and final adjustment of the gage is effected by turning the spindle a' to cause the screw threads thereon to traverse the nut section in the bearing block. The end of the spindle opposite the gage plate is preferably provided with a knurled head or finger piece a^{13} which admits of the spindle being turned to adjust the gage and also serves in conjunction with a spring a^{14} secured at one end to the cap a^8 and having at its other end a ridge or rib to engage the corrugations in the periphery of the head a^{13} to hold the spindle against accidental displacement.

Secured to the end of the spindle a' is a section of flexible shafting a^{15}, which in turn is preferably secured to the end of a substantially rigid shaft a^{16} mounted in journal brackets a^{17}, attached at appropriate points to the press frame, the forward end of said shaft a^{16} being journaled in a bracket a^{19} located near the delivery end of the press, where the pressman or operator is usually stationed. The end of the shaft a^{17} is provided with a suitable hand wheel a^{18} by means of which the shaft may be rotated, thereby rotating the spindle a' and adjusting the position of the gage plate a^3 to any desired extent. The provision of the flexible shaft a^{15} not only admits of a ready operation of the gage spindle a' as described, but also allows for the adjustment of the side gage a bodily to any desired position on the feed board.

The end gages b indicated in Figs. 1, 2 and 3, may be of any standard type or form, and as illustrated may each consist of a screw threaded spindle b' having thereon a gage plate b^2 provided with a clip spring b^3. The spindle is mounted in a bearing block b^4 which is provided with a threaded opening to receive the threads on the spindle b', said block being secured to the usual cross rock shaft E which is mounted in the side frames of the machine, which rock shaft carries the usual spring clips or tongues and is rocked or oscillated to lift the clips and the gages out of contact with the cylinder when the latter is rotated. The end of the spindle b' is provided with a milled head b^6 with which coöperates a spring stop b^7 to hold the spindle in adjusted position. A flexible shaft section b^8 is secured to the end of the spindle b' and is in turn securely attached to a shaft section b^9, mounted, similarly to shaft section a^{16}, in bearing brackets b^{10} and a^{19}, and is provided with a hand wheel b^{11} similar to that on shaft a^{16}. The flexible shaft, as will be evident, admits of the gages b being adjusted longitudinally of the rock shaft E, as may be found necessary for printing sheets of different widths.

Two of the gages b are illustrated, but it will be understood that a greater number may be employed if found desirable and necessary, and in each case, the individual spindles thereof are connected to an operating hand wheel located at the delivery end of the press, by means of a suitable operating shaft b^9 and flexible shaft connection b^8. As indicated in the drawings, the respective shafts for adjusting the two end gages b are located on opposite sides of the press, but obviously they may be so disposed as to bring all of the shafts on the same side of the press, if desired. In fact, the location of the operating shafts may be changed to best suit the conditions of operation or the construction of the press, and it will be understood that the particular location indicated is merely by way of example. As illustrated in detail in Fig. 3, the end gages b are shown coöperating with the cylinder while the latter is stopped and ready to receive a sheet of paper from the feed board C, and associated with the gage is one of the spring clips I referred to and one gripper finger H mounted upon a shaft G, such as are usually employed in presses of this type.

It will be understood that by turning the individual hand wheels b^{11}, the gage spindles b' will be adjusted in the bearing blocks b^4 to bring the gage plates b^2 in any desired position with respect to the edge of the cylinder, and thereby to accurately define the

position of the horizontal edge of the paper being fed to the press.

The mode of applying the invention to the end gages of a cylinder press, when the gages are located in or carried by the cylinder is illustrated in Figs. 7 and 8, in which there is shown one such end gage c adjustably mounted in a bearing block c^2 carried by a cross rod c^5, which latter is supported within the cylinder in the usual manner. The particular type of gage as illustrated, involves the threaded spindle c' cooperating with the threaded bearing block c^2 having thereon the gage plate c^3 which lies adjacent the forward edge of the cylinder opening and a gear wheel c^6 secured to the other end of the spindle, the whole lying substantially within the periphery of the cylinder, as is usual in constructions involving guides of this character. Associated with the gage are spring fingers c^4 attached to the bearing block c^2 and the usual spring clips c^8 carried by the rock shaft E. Mounted on the rock shaft E is a sleeve c^7 provided with a shaft bearing c^9, in which is mounted a short shaft section c^{10} having secured to its forward end a head c^{11} carrying a single tooth c^{12} adapted to be brought into coöperative engagement with the teeth on the head c^6 of the spindle c', so that for each revolution of the shaft c^{10}, the spindle c' is revolved a distance equal to the width of one tooth, and said spindle c' is therefore adjusted to a slight degree toward or from the feed board edge of the cylinder opening. Normally the shaft c^{10} occupies a position so that the tooth c^{12} is out of engagement with the teeth on the head c^6 and also out of the path of movement of the cylinder, as shown in Fig. 7. Preferably the tooth c^{12} is slidably mounted in the head c^{11} and is pressed forward by means of a spring c^{13}, the extent of the forward movement being limited by a pin and slot connection c^{14} between the tooth and the head, as clearly illustrated in Fig. 8. This construction enables the tooth to yield and be forced into the head should it fail to register with the interdental spaces of the spindle head c^6, or should it encounter any other structure which would tend to derange the parts of the mechanism. The short shaft section c^{10} is provided with a knurled head c^{16} which would permit of the operation of the shaft for the first adjustment of the gage. Connected with the shaft c^{10} is a flexible shaft c^{17} similar to those hereinbefore described which, of course, is connected with the operating hand wheel near the discharge end of the press by a shaft section similar to those shown at a^{18} and b^9 respectively, so that the ready and accurate adjustment of the inside gages c may be effected by the operator from his position by merely turning the appropriate hand wheel or hand wheels. It will be apparent from the illustration of this phase of the invention that for each rotation of the hand wheel by the pressman, the tooth c^{12} will engage one of the teeth on the head c^6 of the gage spindle c' and move said gage spindle backward or forward, according to the direction of rotation of the shaft, so that the gage may be quickly and accurately adjusted to the exact position necessary to secure accurate registry of the impressions on the printed sheets. The individual gages c may be adjusted longitudinally of their supporting shaft c^5 and similarly the sleeve c^7 carrying the operating shaft and head, may be adjusted longitudinally of the rock shaft E to bring the shaft c^{10} in alinement with the spindle c' of the gage, so that the adjustment of the spindle may be effected in any position.

From the foregoing, it will be apparent that each of the feed gages of the press is provided with means for adjusting it independently of the other gages from a position adjacent the delivery end of the press where the pressman usually stands, so that the several gages may be quickly and readily adjusted by the operator while he is inspecting the printed sheets as they are delivered, the character of the printing on the sheets affording an immediate index of the necessity for adjustment of the gages and also as to the extent of such adjustment without material loss of time or waste of material.

What I claim is:—

1. The combination with a printing press, of feed gage mechanism therefor including a gage plate and means for effecting fine adjustments of said plate, and means extending to proximity of the operator's station for positively actuating said adjusting means to bring the gage plate directly to any desired point of its range of movement, whereby the adjustment of the gages may be made by the operator without leaving his station at the delivery end of the press and while observing the delivered printed sheets.

2. The combination with a printing press, of a feed gage therefor including a gage plate and an adjusting screw for effecting fine adjustments of said plate, and rotary shafting extending from the adjusting screw to proximity of the operator's station for positively actuating said screw to move the gage plate to any desired point in its range of travel, whereby the adjustment of the gages may be made by the operator without leaving his station at the delivery end of the press and while observing the delivered printed sheets.

3. A feed gage for printing presses, comprising a gage plate and an adjusting screw for effecting fine adjustments of said plate,

a hand operating device located near the press operator's station and transmission mechanism including rotary shafting disposed between said hand operating device and the adjusting screw, whereby the gage plate may be moved directly by the operator at his station to any definite point in its range of travel, while the printed sheets are being delivered under observation of the operator.

4. A feed gage for printing presses, comprising an adjustable gage member, a hand operating device located near the press operator's station, shafting including a flexible shaft section connecting said hand operating device and the adjustable gage member.

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

STEPHEN J. KUBEL.

Witnesses:
ARTHUR L. BRYANT,
CHAS. J. O'NEILL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."