Jan. 12, 1932. H. C. JORDHOY 1,840,319

FOLDER ROLLER ADJUSTING DEVICE

Original Filed Aug. 20, 1926 2 Sheets-Sheet 1

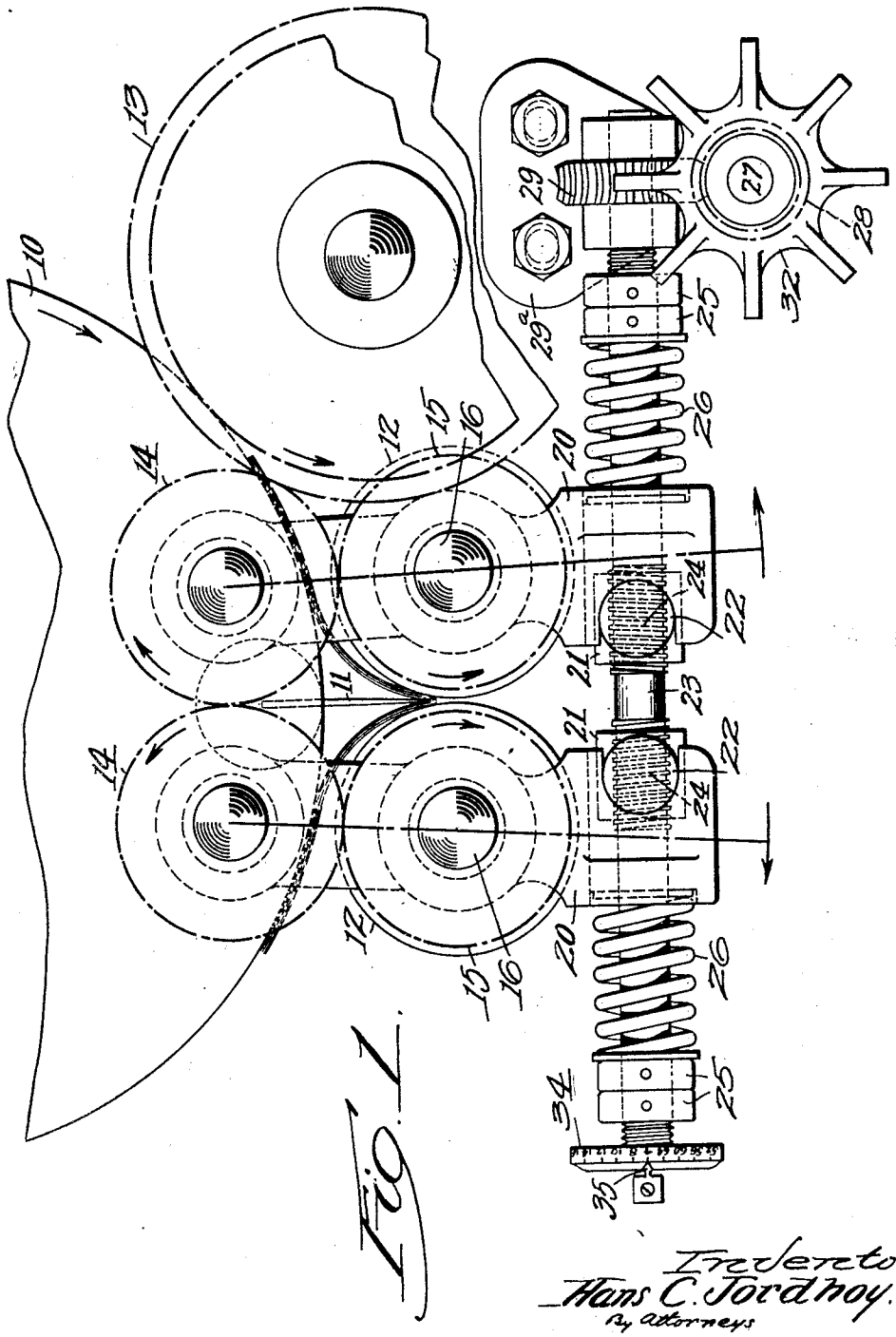


Fig. 1.

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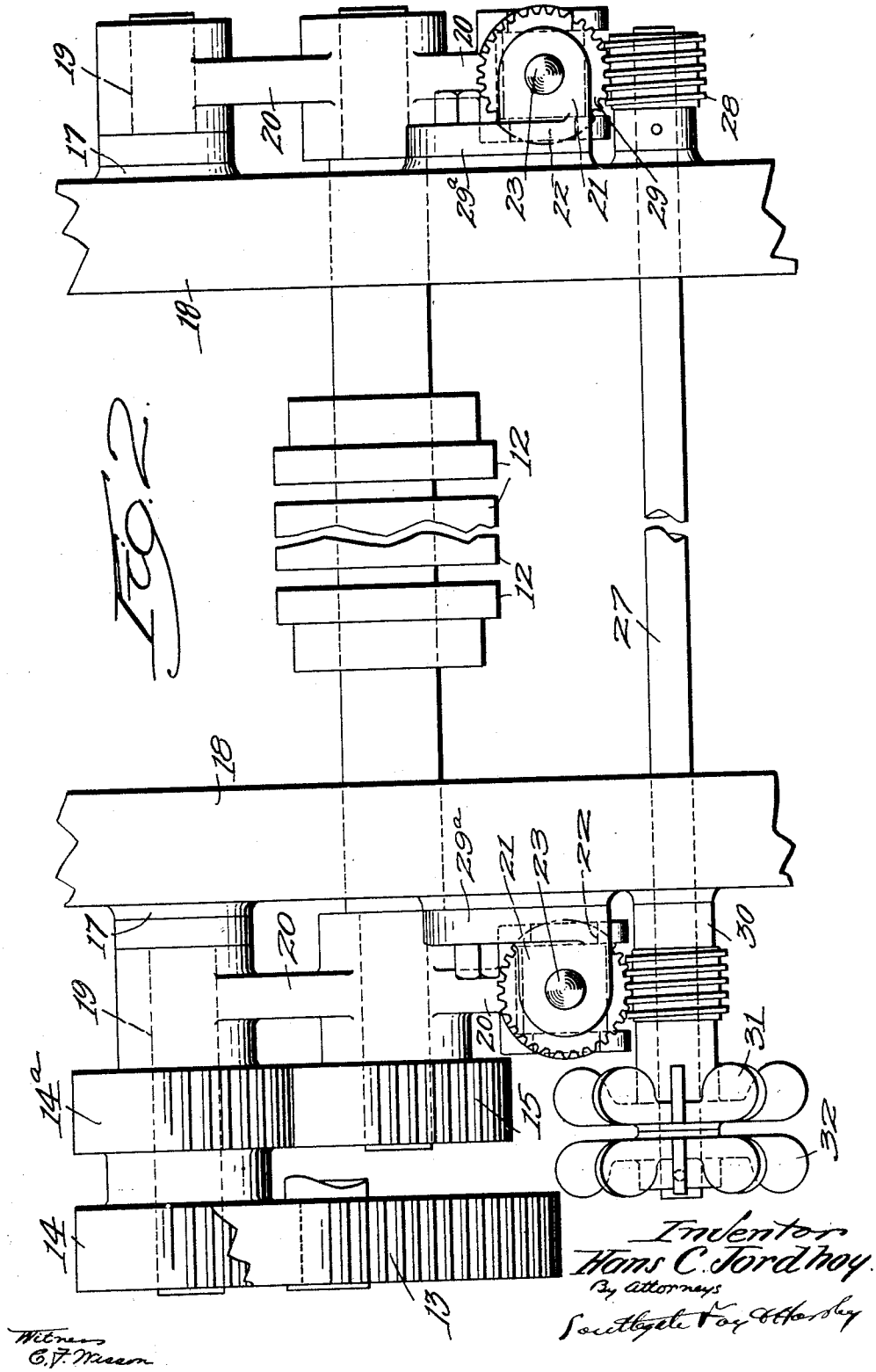


Fig. 2.

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UNITED STATES PATENT OFFICE

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FOLDER ROLLER ADJUSTING DEVICE

Application filed August 20, 1926, Serial No. 130,368. Renewed June 16, 1931.

This invention relates to the adjustment of a pair of folding rollers in a folding machine. The principal objects of the invention are to provide means whereby the two rollers can be adjusted to change the distance between them and suit them for the delivery of folded products of different thicknesses and yet keep the rollers perfectly centered with respect to the folding blade; to provide a simple form of support for each form roller mounted to swing on a center located in convenient position for securing the above-mentioned adjustment, and to provide an indicating device to show the thickness of the product to which the rollers are set.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is an end view of part of a folder showing a preferred form of this invention applied thereto; and

Fig. 2 is a front view of the same with parts broken away.

The folding rollers of the usual folders receive the paper as it is folded by a blade in the folding cylinder and deliver it into the fan and from there it is delivered on the delivery belt. The relationship of the folding blade to the folding rollers is of considerable importance since a properly folded paper depends upon the manner in which the blade tucks the paper into the folding rollers. Heretofore, the customary design of folding roller supports consisted of a pair of rollers driven at a proper speed by suitable gearing, one of the rollers being carried in stationary bearings while the other was supported in a spring seated movable bearing. The spring seated roller is depended upon to take care of variations in the thickness of the product since a press may be called upon to deliver an 8-paged paper one day and a 64-paged paper the next, thereby necessitating a change in position of the spring seated roller amounting to about one-eighth of an inch or more.

It has been found in practice that it is highly desirable to maintain the position of the folding blade centrally between the two folding rollers. This is not possible where one of the folding rollers is held in stationary bearings, without continually changing the relationship between the folding roller and folding blade for every thickness of product the press may be required to deliver. If one roller only is adjusted the blade cannot enter centrally the space between them.

I have shown the invention as applied to a folder of the usual type in which the folding cylinder 10 is provided with a blade 11 which, at the folding instant, projects outwardly from the surface of the cylinder as indicated in Fig. 1. It is desirable that this blade extend exactly mid-way between the two folding rollers 12. The parts are shown here driven by a gear 13, two meshing gears or pinions 14 driven therefrom, gears 14*a* and two gears 15 on the shafts 16 of the folding rollers for driving the folding rollers directly. Thus I provide a drive for the folding rollers which is not disengaged or disturbed in any way by the movement of these rollers toward or from each other in adjusting them.

Mounted on bosses 17 on the folder frame 18 at each side of the machine, are a pair of studs 19 on which are pivotally suspended brackets or supports 20 so as to swing about the axes of these studs. These two supports carry the two shafts 16 of the folding rollers. It will be obvious, from comparison of the two figures, that these rollers can swing toward or from each other to provide for adjustment of the space for the printed products.

The two supports 20 have at their ends projections provided with spaces for receiving nuts 21 on which are mounted stops 22. These stops are provided for the purpose of engaging the ends of the supports 20, in the depressions in which they are shown located, and holding them back away from each other. Through the nuts passes a rod 23 which is provided with right and left hand screw threads 24, so that when the rod is turned the two nuts and stops will be moved simultaneously toward or from each other equal distances. This provides for the equal adjustment of the two folding rollers so that they will always be centered if they are once set up in centered

position. On these rods are nuts and check nuts 25 for backing up springs 26 which bear on the freely pivoted supports 20 and hold them forward toward each other and in engagement with the stops 22.

For the purpose of operating the two rods 23, which of course are located at both ends of the machine, I have shown the shaft 27 extending across the machine and having two worms 28 meshing with worm wheels 29 mounted on the two shafts 23. These worm wheels have threaded passages through them by which they move the rod 23 back and forth when turned. Each one is mounted on a bracket 29^a which is adjustably mounted on the frame 18. One of these worm wheels is pinned directly to the shaft 27 and the other is fixed on a sleeve 30 which is free to rotate on that shaft. The sleeve and the shaft 27 have hand wheels 31 and 32. When these two hand wheels are grasped and rotated together, both shafts 23 are adjusted the same distance, but either one can be turned without turning the other for changing the relative adjustment of the two ends of the folding rollers.

One shaft 23 is equipped with an indicator or dial 34 co-operating with a pointer 35 mounted on the frame 18 in fixed position. This indicator is calibrated to give a direct reading of the number of pages the rollers are set to propel.

By this means the folding blade is kept in its central vertical position and does not have to be deflected to either side on account of the rollers. The distance between it and both folding rollers is varied equally to suit all variations of thickness of the product and there is no danger of getting it out of center with respect to these rollers. The apparatus is simple and easy to operate and does not add complications to the press, but on the other hand assists the operator in making his adjustments.

Although I have illustrated and described only a single form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:

1. In a printing press folder, the combination with the folding cylinder and its blade, of a pair of folding rollers, a pair of supports for the folding rollers at each end, said supports being pivoted to the frame so that the rollers can be swung toward or from each other independently.

2. In a printing press folder, the combination with the folding cylinder and its blade, of a pair of folding rollers, a pair of supports for the folding rollers at each end, said supports being pivoted to the frame so that the rollers can be swung toward or from each other independently, and means connecting said supports for adjusting them equal distances in opposite directions simultaneously.

3. In a printing press folder, the combination with the folding cylinder and its blade, of a pair of folding rollers, a pair of supports for the folding rollers at each end, said supports being pivoted to the frame, and arranged substantially radially with respect to the folding cylinder, springs for forcing the frames and rollers toward each other at all times, and simultaneously adjustable means for holding them apart and securing equal adjustment of the two rollers.

4. In a printing press folder, the combination with the folding cylinder and its blade, of a pair of folding rollers, a pair of supports for the folding rollers at each end, said supports being pivoted to the frame, and depending therefrom, a rod extending transversely of each pair of supports, stops on the rods for holding the rollers from each other, right and left hand screw threads on the rods engaging with the stops to ensure equal adjustment in opposite directions, and springs on the rods for constantly forcing the supports against the stops.

5. In a printing press folder, the combination with the folding cylinder and its blade, of a pair of folding rollers, a pair of supports for the folding rollers at each end, said supports being pivoted to the frame so that the rollers can be swung toward or from each other independently, and means for either simultaneously or independently adjusting the supports at opposite sides of the folder.

6. In a printing press folder, the combination with the folding cylinder and its blade, of a pair of folding rollers, a pair of supports for the folding rollers at each end, said supports being pivoted to the frame so that the rollers can be swung toward or from each other independently, a pair of gears fixed with respect to the two rollers for operating them, a second pair of gears centered on the pivotal axes of the supports meshing with each other and each with one of the first named pair, a third pair of gears each fixed to one of the second pair, and a driving gear for driving one of the third pair.

7. In a printing press folder, the combination with the folding cylinder and its blade, of a pair of folding rollers, a pair of pivoted supports for the folding rollers at each end, whereby the rollers can be swung toward or from each other independently.

8. In a printing press folder, the combination with the folding cylinder and its blade, of a pair of folding rollers, a pair of supports for the folding rollers at each end, one of said supports being pivoted so that one of the rollers can be swung toward or from the other, and means for adjusting the pivoted supports.

9. In a printing press folder, the combination with the folding cylinder and its blade, of a pair of folding rollers, a pair of supports for the folding rollers, a rod extending transversely of said supports, stops on the rods for holding the rollers from each other, and means on the rods engaging with the stops to ensure equal adjustment in opposite directions.

In testimony whereof I have hereunto affixed my signature.

HANS C. JORDHOY.