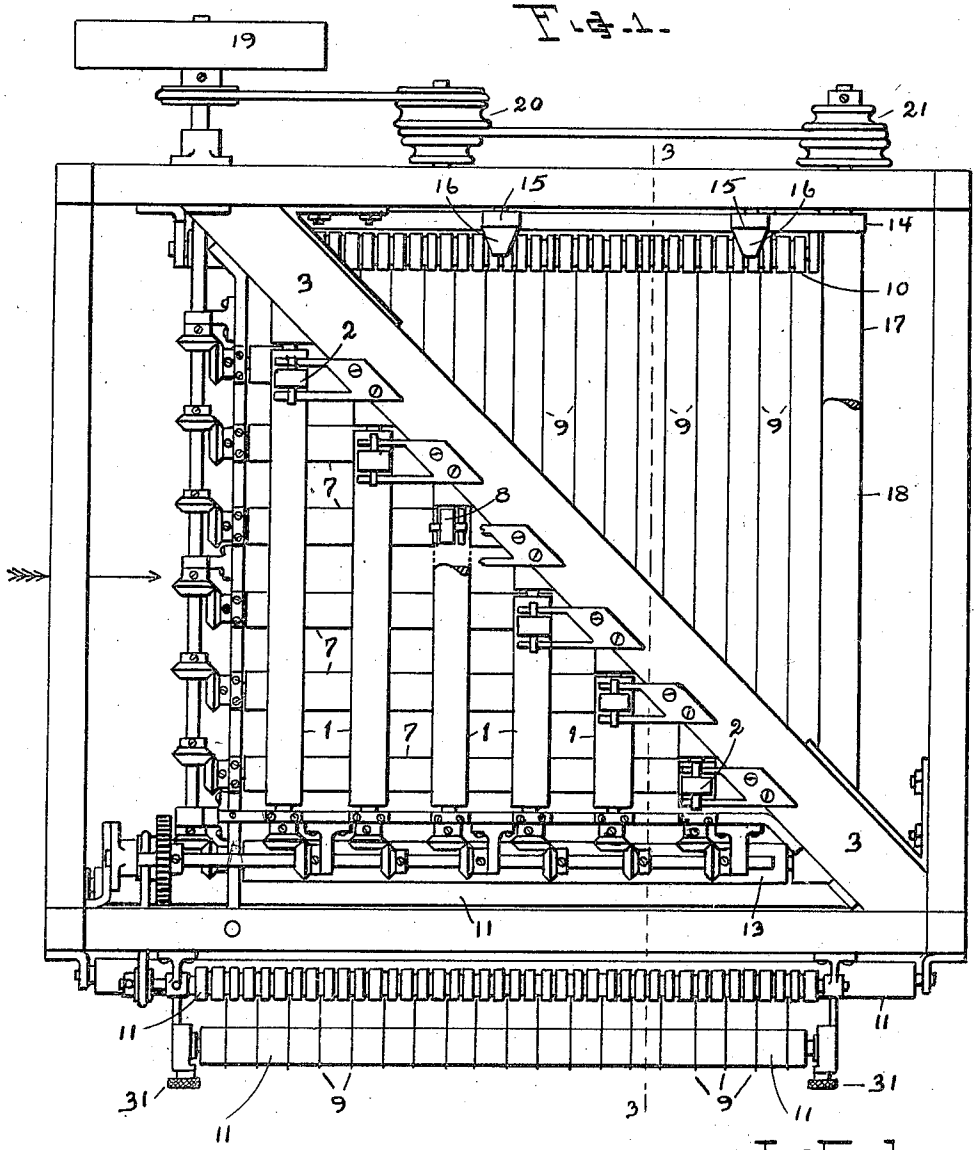
Sept. 25, 1923. 1,469,168

J. A. METS

SHEET TURNING DEVICE

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Fig. 1.



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Fig. 2.

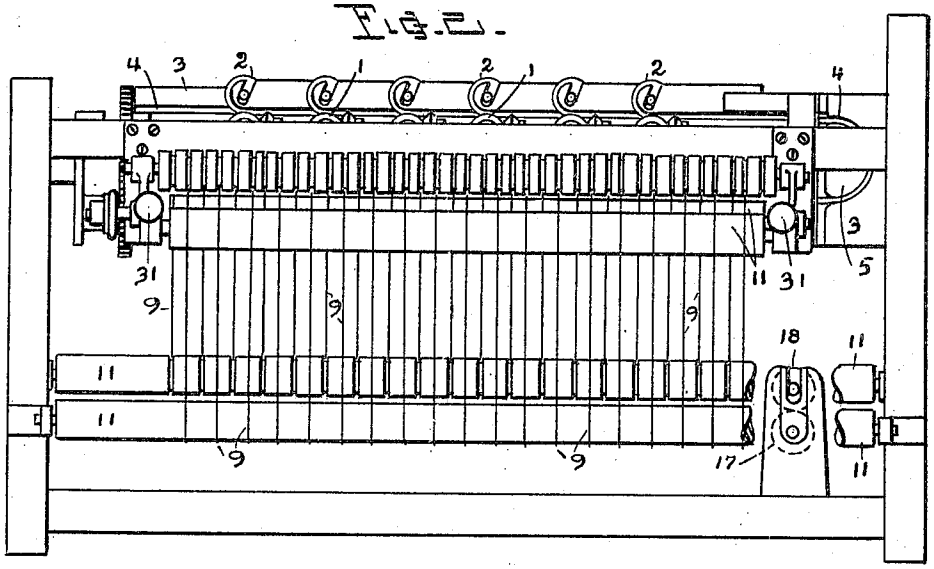


Fig. 3.

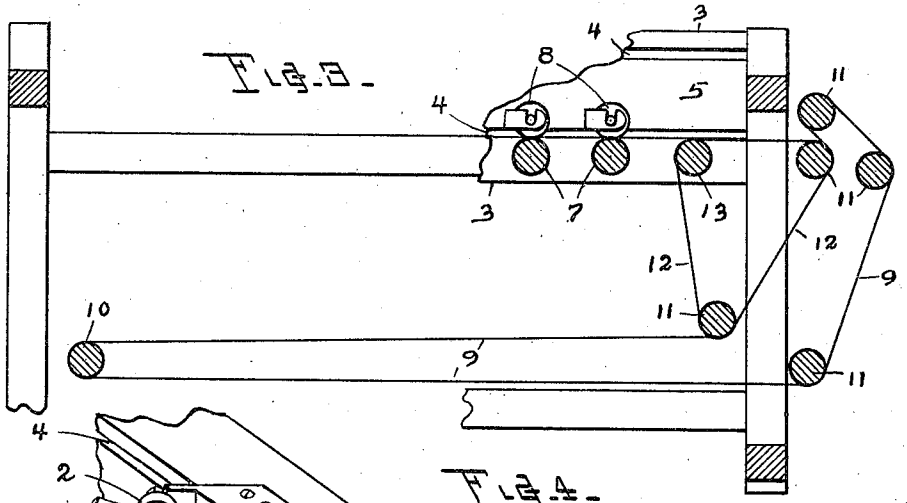
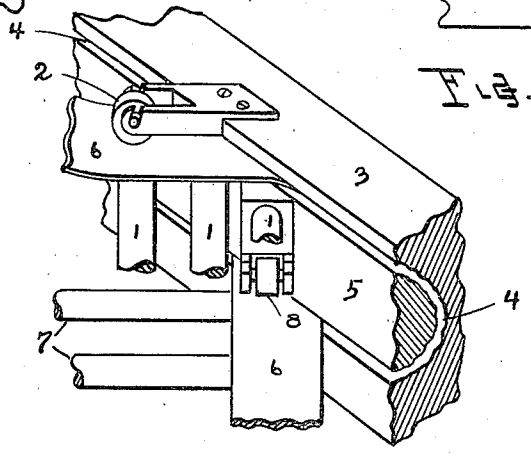


Fig. 4.



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Fig. 1.

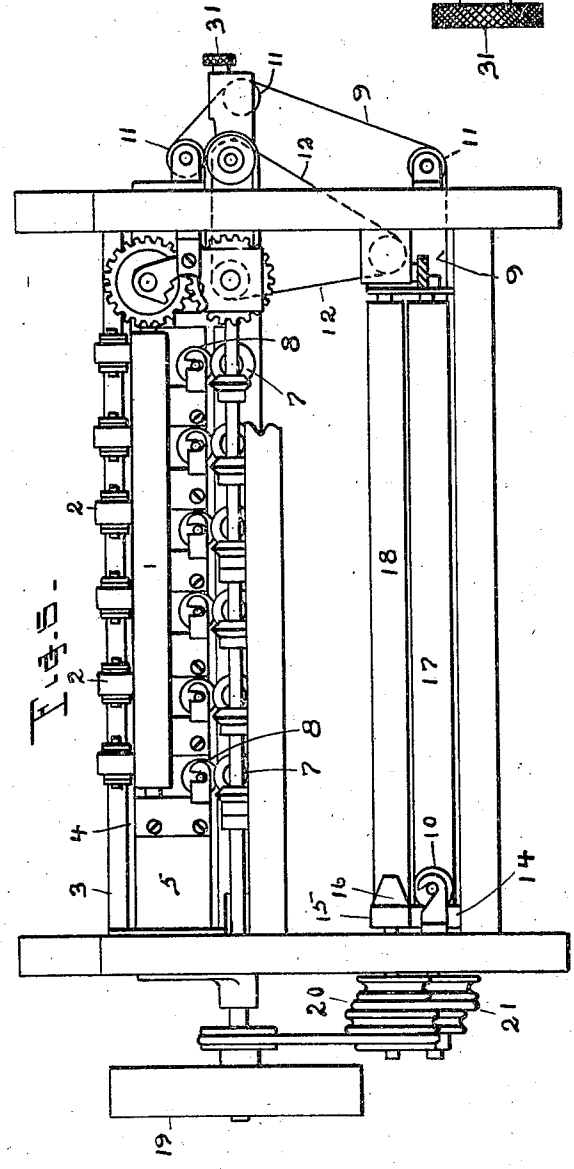


Fig. 4.

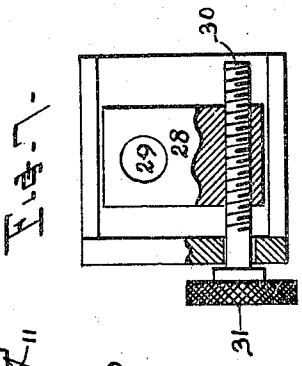


Fig. 5.

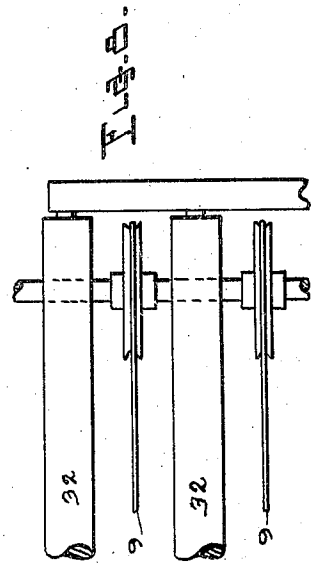
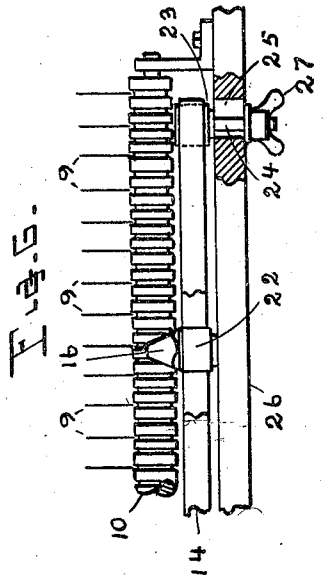


Fig. 6.



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Patented Sept. 25, 1923. 1,469,168

UNITED STATES PATENT OFFICE.

JAMES A. METS, OF FREMONT, NEBRASKA.

SHEET-TURNING DEVICE.

Application filed October 23, 1922. Serial No. 596,242.

To all whom it may concern:

Be it known that I, JAMES A. METS, a citizen of the United States, residing in the city of Fremont, county of Dodge, and State of Nebraska, have invented certain new and useful Improvements in Sheet-Turning Devices, whereof the following is a specification.

This invention relates to paper turning machines.

The machine of the invention is desired, more particularly for use with paper ruling devices receiving the partially ruled paper, turning it at right angles, whereby, the paper is ruled in two directions, but the invention is capable of use for other purposes than for ruling.

In the machine hereinafter described, as being an embodiment of my invention, the paper, as it comes from one of the ruling devices, is delivered therefrom into the turning machine upon a set of rollers, against which it is held by idlers, and is fed thereby to an arcuate slot, extending at an angle to the path of the paper, and is, by said slot, turned at right angles to its former course. The paper is then reversed by means of tapes and rollers to bring the initial upper side again to the upper position, and fed onward upon tapes to a belt running at right angles to its course, and being pressed against said belt by idler rollers is fed outward thereby to the second ruling device. The last named idlers, which pass the paper against the belt, have beveled ends, to ensure the paper engaging under them, though its end may be somewhat upcurved from the various operations already undergone.

In the accompanying three sheets of drawing, I have illustrated the machine above referred to as an embodiment of my invention. The figures of the drawing are as follows:—

Figure 1 is a top, or plan view of the machine.

Figure 2 is a side elevation, as seen from the side at the lower edge of Figure 1.

Figure 3 is a partial section, showing the reversing mechanism. The section is taken at the line 3, 3, Figure 1.

Figure 4 is a fragmentary sectional perspective view showing the arcuate turning slot and contiguous parts, and a slip of paper going through the same.

Figure 5 is a fragmentary elevation from the front of the machine, or the side at the left of Figure 1, and shows the driving mechanism and the rollers and idlers at right angles to each other.

Figure 6 is a detail, showing the top of the final delivery belt and an idler cooperating therewith, and the means for tensioning the belt, and the means for supporting the belt.

Figure 7 shows a means of adjusting the bearings of rollers.

Figure 8 is a fragmentary plan view of a modified form of the shunting device.

Referring to the several figures, and more especially, at first, to Figure 1, the paper is entered from the side at the left of Figure 1, in the direction of the arrow, and between the rolls 1 and the idlers 2. These members feed the paper to the bar 3. The bar 3 contains a slot 4, shown in Figures 2 and 4 extending its length, and recurved so as to receive paper at its upper opening and guide it around the core 5 and deliver it at its lower opening, as seen more particularly in Figure 4, in which such a piece of paper is shown at 6.

This operation reverses the paper and brings the lower side uppermost, and it must again be reversed to bring the initial upper side uppermost once more. To such end the paper is received from the arcuate slot 4 upon rollers 7, at right angles to the rolls 1, and between said rolls 7 and pressure idlers 8, and is fed by them to a system of tapes or strings 9, shown more particularly in Figure 3, which extend across the machine to the guide roll 10, and convey the paper to that point.

These tapes pass over suitable idlers 11. The paper is held to the tapes 9, by idler tapes 12 passing over two of the rolls 11, and a third roll 13. The paper is thus reversed again and delivered at the roll 10 with its edge upon a belt 14, running at right angles to the tapes 9, against which it is held by the idlers 15. The ends of the idlers 15, extend over the tapes 9, and are beveled, as at 16 to ensure the edge of the paper entering under them. The paper, which now lies loosely on the tapes 9, is gripped by the belt 14 and idlers 15, and fed by them at right angles to its former course, to the roller 17 and idler roll 18 and by them out of the machine at the side

at the right of Figure 1 and there into any device or receptacle adapted to receive it, such as a second ruling device.

At 19, Figures 1 and 5, is shown, a conventional type of drive pully, and at 20 and 21, various pulleys and belts for operating the moving members of the machine. One of these devices gives motion to roller 17 carrying the belt 14. The latter is supported on rolls 22, one of which is shown in Figure 6 arranged preferably under the pressure rollers 15. The tension of belt 14 is adjusted by mounting the end supporting roller 23 on a stud 24, which extends through a slot 25, in the contiguous frame member 26 of the machine, and threading the end of the stud and providing it with a clamp nut 27.

The tape rolls, or some of them, and other parts, as idler roll 18, also require adjustment to regulate the tension of the tapes 9. To this end I provide the mechanism shown in Figure 1 and more particularly in Figure 7. 28 is a movable bearing block, in which a roll may have a bearing, as at 29. This block 28 is traversed by a threaded shank 30 with a thumb head 31, by which the block may be moved laterally of the journal.

In place of the belt 14, a series of rollers 32 coacting with the pressure roller 15 may be used for shunting the paper out of the machine. These rollers may be disposed between the horizontal tapes 9, as shown in Figure 8.

Having thus described my invention, and an embodiment of it, in the full, clear and exact terms required by law, and knowing that it comprises novel, useful and valuable improvements in the art to which it pertains, I here state that I do not wish to be limited to the precise construction and arrangement of the several parts, as herein set forth, as the same may be variously modified by a skilled mechanic without departing from the spirit and scope of my invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States, is the following, to wit:—

1. In combination with the feed of a paper moving machine, a bar extending obliquely to the direction of feed, said bar having therein an arcuate slot through which the paper is adapted to be fed, and by which it is turned at an angle to its initial direction.

2. A paper moving machine, comprising, in combination, a series of feed rollers and pressure rolls, adapted to feed paper, a bar, having an arcuate slot, positioned obliquely to the direction of said feed, and adapted to receive paper from said rollers a second series of rollers and coacting pressure rolls, adapted to receive paper from said arcuate slot.

3. A paper moving machine, comprising, in combination, a series of feed rolls and pressure rolls coacting therewith, adapted to feed paper, a bar having an arcuate slot, positioned in the path of said paper and obliquely thereto, and adapted to receive paper from said rollers, a second series of rollers and coacting pressure rolls, adapted to receive paper from said arcuate slot and feed it onward, and a series of feed tapes adapted to receive paper from said last named rollers and convey it onward.

4. A paper moving machine, comprising, in combination, a series of feed rolls and coacting pressure rolls, a bar having an arcuate slot therein oblique to said rollers, and adapted to receive paper therefrom, a second series of rollers and coacting pressure rolls positioned and adapted to receive paper from said arcuate slot, a series of feed tapes adapted to receive paper from said last named rollers and convey it onward, and means for taking said paper from said tapes and moving it at an angle thereto.

5. A paper moving machine, comprising, in combination, a series of feed rollers and coacting pressure rolls, a bar having an arcuate slot oblique to said rollers, a second series of rollers and coacting pressure rolls oblique to said slot, a series of feed tapes operating in the same direction as said last named rollers, and a belt and coacting pressure rolls adapted to feed at an angle to said tapes.

6. A paper moving machine, comprising, in combination, a series of feed rollers and coacting pressure rolls, a bar having an arcuate slot oblique to said rollers, a second series of rollers and coacting pressure rolls oblique to said slot and at an angle to said first named rollers, a series of feed tapes operating in the same direction as said last named rollers, and a belt and coacting supporting and pressure rolls, said pressure rolls having tapered ends toward the oncoming paper.

In testimony that I claim the foregoing I have hereto set my hand this 7th day of October, 1922.

JAMES A. METS.