E. H. COTTRELL.

WEB FOLDING MACHINE.

APPLICATION FILED SEPT. 23, 1913.

1,186,970.

Patented June 13, 1916.

2 SHEETS—SHEET 1.

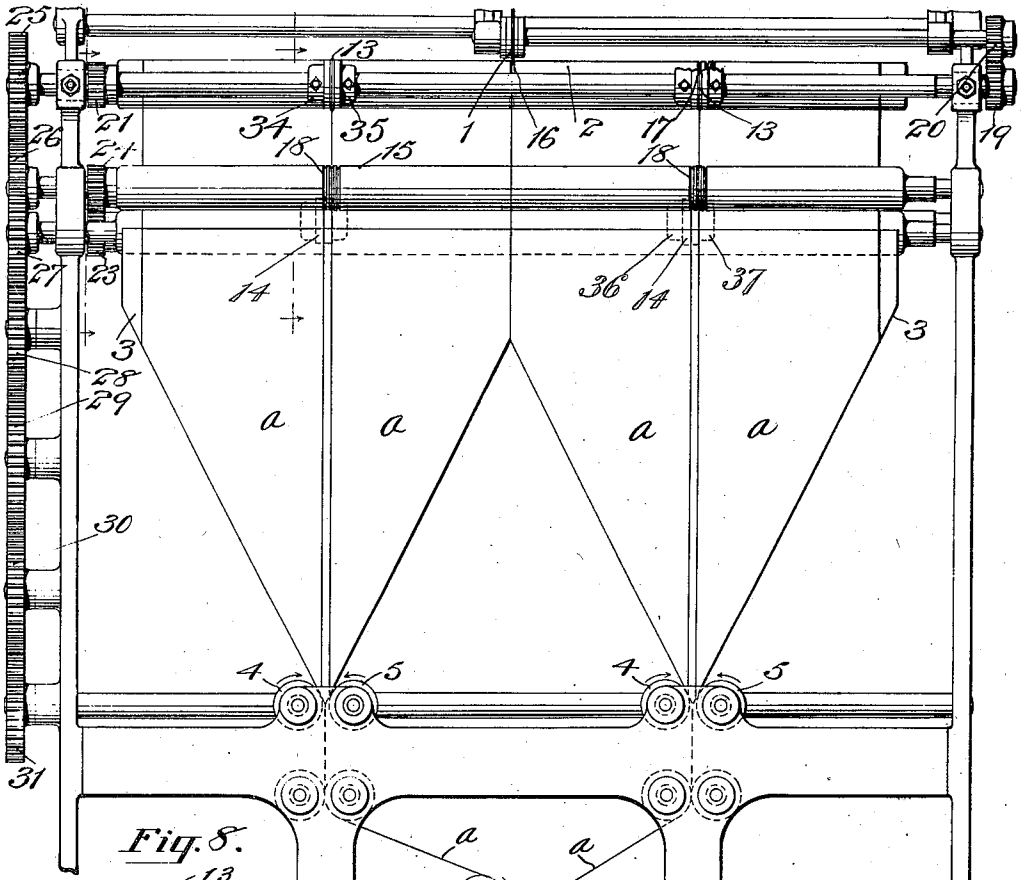


Fig. 8.

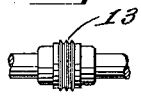


Fig. 9.

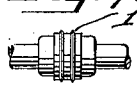


Fig. 10.

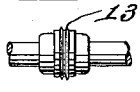
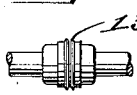


Fig. 11.



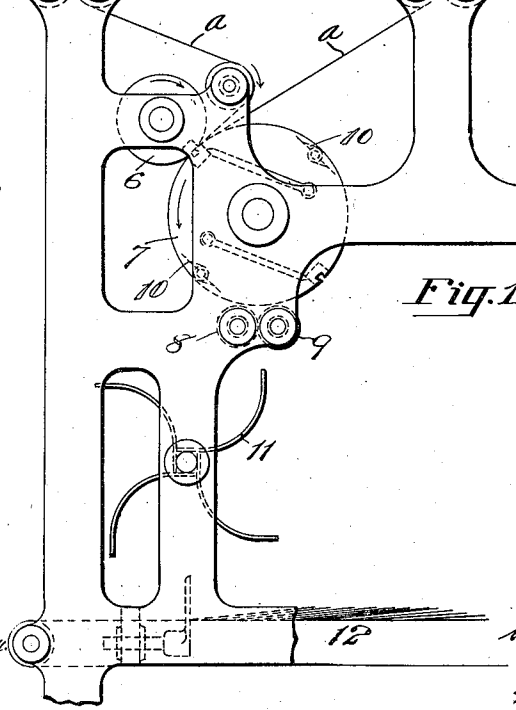


Fig. 1.

Witnesses:-

Hyperion Barry

F. George Barry.

Inventor:-

Edgar H. Cottrell

by his attorneys

Brown & Durand

E. H. COTTRELL.

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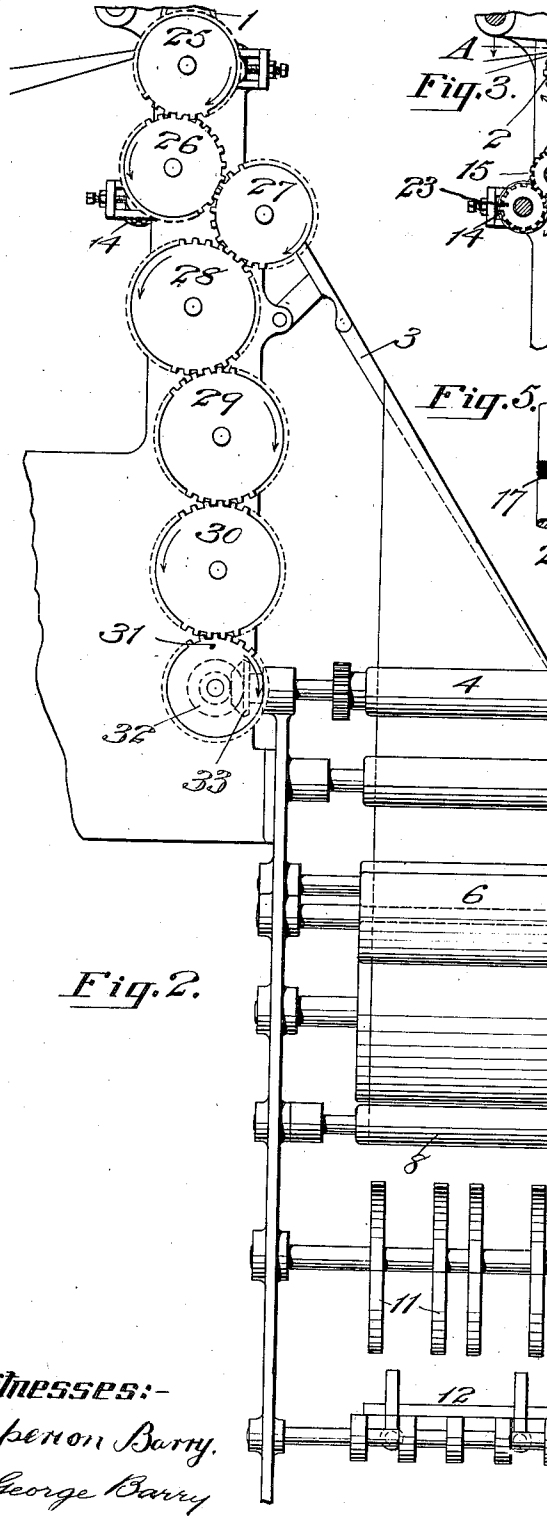


Fig. 2.

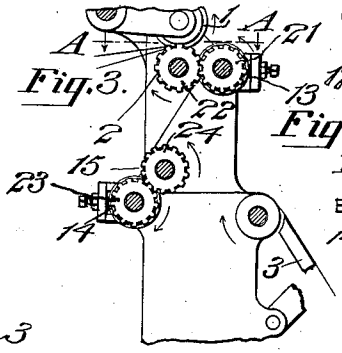


Fig. 3.

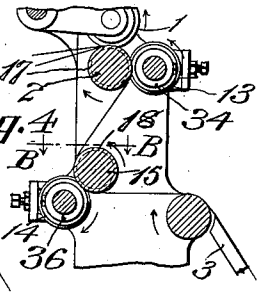


Fig. 4

Fig. 6.

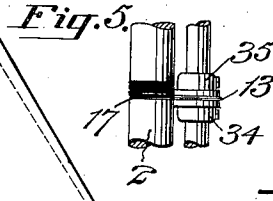
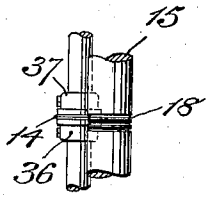


Fig. 5.



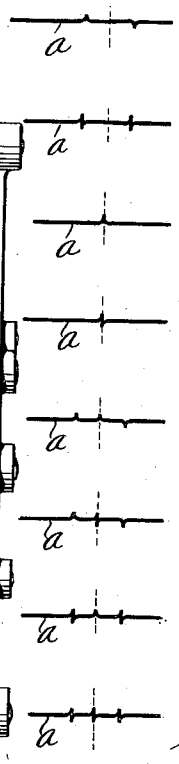


Fig. 7.

Witnesses:-

Hyperion Barry.

F. George Barry

Inventor:-

Edgar H. Cottrell

by his attorneys

Brown & Seward

UNITED STATES PATENT OFFICE.

EDGAR H. COTTRELL, OF WESTERLY, RHODE ISLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO C. B. COTTRELL & SONS COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

WEB-FOLDING MACHINE.

1,186,970. Specification of Letters Patent. Patented June 13, 1916.

Application filed September 23, 1913. Serial No. 791,333.

To all whom it may concern:

Be it known that I, EDGAR H. COTTRELL, a citizen of the United States, and resident of Westerly, in the county of Washington and State of Rhode Island, have invented a new and useful Improvement in Web-Folding Machines, of which the following is a specification.

The object of my invention is to provide means for creasing a web which is to be folded, at or upon one or both sides of the line of fold, so as to facilitate the opening of the folded product and the turning over of the pages thereof, and in some instances facilitating the folding of the web.

The invention more particularly consists in means for imparting reverse creases in the web at the line of fold or upon either side or both sides of the line of fold for accomplishing the above objects.

A practical embodiment of the invention is represented in the accompanying drawings in which so much of a web folding machine of that type which provides a back margin fold lengthwise of the travel of the web, as is necessary to fully illustrate my invention, is shown.

Figure 1 illustrates the machine in front elevation. Fig. 2 is a view of the machine in side elevation. Fig. 3 is a detail section showing the geared connection between the first creasing disk and its roll and the geared connection between the second creasing disk and its roll. Fig. 4 is a detail section taken through the web creasing means. Fig. 5 is a detail section taken in the plane of the line A—A of Fig. 3. Fig. 6 is a detail section taken in the plane of the line B—B of Fig. 4. Fig. 7 shows a few of the many ways in which the web may be creased. Fig. 8 shows a group of three creasing disks for creasing the web at the line of fold and upon opposite sides of the line of fold. Fig. 9 shows two creasing disks arranged to crease the web upon opposite sides of the line of fold. Fig. 10 shows two creasing disks arranged for creasing the web at the line of fold and upon one side thereof, and Fig. 11 shows two creasing disks arranged to crease the web along the line of fold and on the other side thereof.

The two superimposed webs *a* are herein shown as being divided longitudinally into two superimposed narrow webs by the rotary slitter 1, which coacts with the roll 2 over which the webs are passed.

The two narrow superimposed webs are passed over their respective V-shaped formers 3, and between the customary fold setting rolls 4, 5, for imparting a back margin fold lengthwise of the travel of the webs. The two sets of narrow superimposed folded webs may then be associated and led between the coacting and folding cylinders 6, 7, and the associated and folded sheets may be again folded through the rolls 8, 9, by the blades 10 on the cylinder 7. A rotary sheet dropper 11 is arranged to receive the product from the rolls 8, 9, and deposit it on to the endless delivery carrier 12.

The means for creasing the narrow superimposed webs either along the line of fold or upon one or both sides of the line of fold, is herein shown as comprising one or more creasing disks 13, which coact with the roll 2, and one or more creasing disks 14 which coact with the roll 15, around which rolls 2 and 15, the superimposed webs pass on their way to their respective formers.

Gears 19, 20, 21, 22 connect the roll 2 with the shafts of the slitter 1, and creasing disks 13, and gears 23, 24, connect the roll 15 with the shafts of the creasing disks 14. A train of gears 25, 26, 27, 28, 29, 30, 31, 32, 33, connect the slitting and creasing mechanisms with the fold setting rolls 4, 5.

The roll 2 is provided with a circumferential groove 16 for receiving the slitter 1. This roll is also provided with three circumferential grooves 17, which are arranged to receive one, two or three of the creasing disks 13. The roll 15 is provided with three circumferential grooves 18, for receiving one, two or three of the creasing disks 14.

In Figs. 1 to 6 inclusive, one creasing disk 13 is shown clamped in position between the adjustable collars 34, 35, and one creasing disk 14 is shown as clamped between the adjustable collars 36, 37. The two creasing disks are so arranged with respect to each other that the superimposed narrow webs are creased lengthwise of their travel upon opposite sides of their line of fold, the crease upon one side being formed in one face of the superimposed web and the crease on the other side being formed in the opposite face of the superimposed web.

Where one creasing disk 13 and one creas-

ing disk 14 are used, they may be adjusted along their shafts so as to reversely crease the superimposed webs along their line of fold, instead of creasing the same upon both sides of the line of fold.

In Fig. 8, I have shown three creasing disks arranged to crease the superimposed webs at and upon both sides of the line of fold. In Fig. 9 I have shown two creasing disks arranged in position to crease the superimposed webs upon both sides of the line of fold. In Fig. 10, I have shown two creasing disks arranged to crease the superimposed webs at the line of fold and upon one side thereof, and in Fig. 11, I have shown the two creasing disks arranged to crease at the line of fold and along the other side thereof.

While I have shown two superimposed main webs, it is to be understood that one or more webs may be run through the machine as desired. Also, while I have illustrated two V-shaped formers and one slitting mechanism, it is to be understood that any number of formers and slitting mechanisms may be used.

I have shown in Fig. 7, a number of different methods of creasing the web *a*, and I have shown in Figs. 8, 9, 10, and 11 a number of different arrangements of the creasing disks 13 or 14, but it is obvious that these are only a few of the many combinations which might be employed to produce the creasing of the web or webs as desired.

What I claim is:

1. In a web folding machine, means for folding the web and means for creasing the web upon one side of and in close proximity to the line of fold.

2. In a web folding machine, means for folding the web and means for creasing the web upon one side of and in close proximity to the line of fold before the web is folded.

3. In a web folding machine, means for folding the web lengthwise of its travel and means for creasing the web upon one side of and in close proximity to the line of fold.

4. In a web folding machine, means for folding the web lengthwise of its travel and means for creasing the web upon one side of and in close proximity to the line of fold before the web is folded.

5. In a web folding machine, means for folding the web and means for reversely creasing the web upon one side of and parallel with the line of fold.

6. In a web folding machine, means for folding the web and means for reversely creasing the web upon one side of and parallel with the line of fold before the web is folded.

7. In a web folding machine, means for folding the web lengthwise of its travel and means for reversely creasing the web upon one side of and parallel with the line of fold.

8. In a web folding machine, means for folding the web lengthwise of its travel and means for reversely creasing the web upon one side of and parallel with the line of fold before the web is folded.

9. In a web folding machine, means for folding the web and means for creasing the web upon both sides of and in close proximity to the line of fold.

10. In a web folding machine, means for folding the web and means for creasing the web upon both sides of and in close proximity to the line of fold before the web is folded.

11. In a web folding machine, means for folding the web lengthwise of its travel and means for creasing the web upon both sides of and in close proximity to the line of fold.

12. In a web folding machine, means for folding the web lengthwise of its travel and means for creasing the web upon both sides of and in close proximity to the line of fold before the web is folded.

13. In a web folding machine, means for folding the web and means for reversely creasing the web upon both sides of and parallel with the line of fold.

14. In a web folding machine, means for folding the web and means for reversely creasing the web upon both sides of and parallel with the line of fold before the web is folded.

15. In a web folding machine, means for folding the web lengthwise of its travel and means for reversely creasing the web upon both sides of and parallel with the line of fold.

16. In a web folding machine, means for folding the web lengthwise of its travel and means for reversely creasing the web upon both sides of and parallel with the line of fold before the web is folded.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this fifteenth day of September 1913.

EDGAR H. COTTRELL.

Witnesses:
A. R. STILLMAN,
E. M. GRANT.