H. A. W. WOOD.

FOLDING AND STAPLING DEVICE.

APPLICATION FILED FEB. 11, 1910.

1,124,375.

Patented Jan. 12, 1915.

2 SHEETS—SHEET 1.

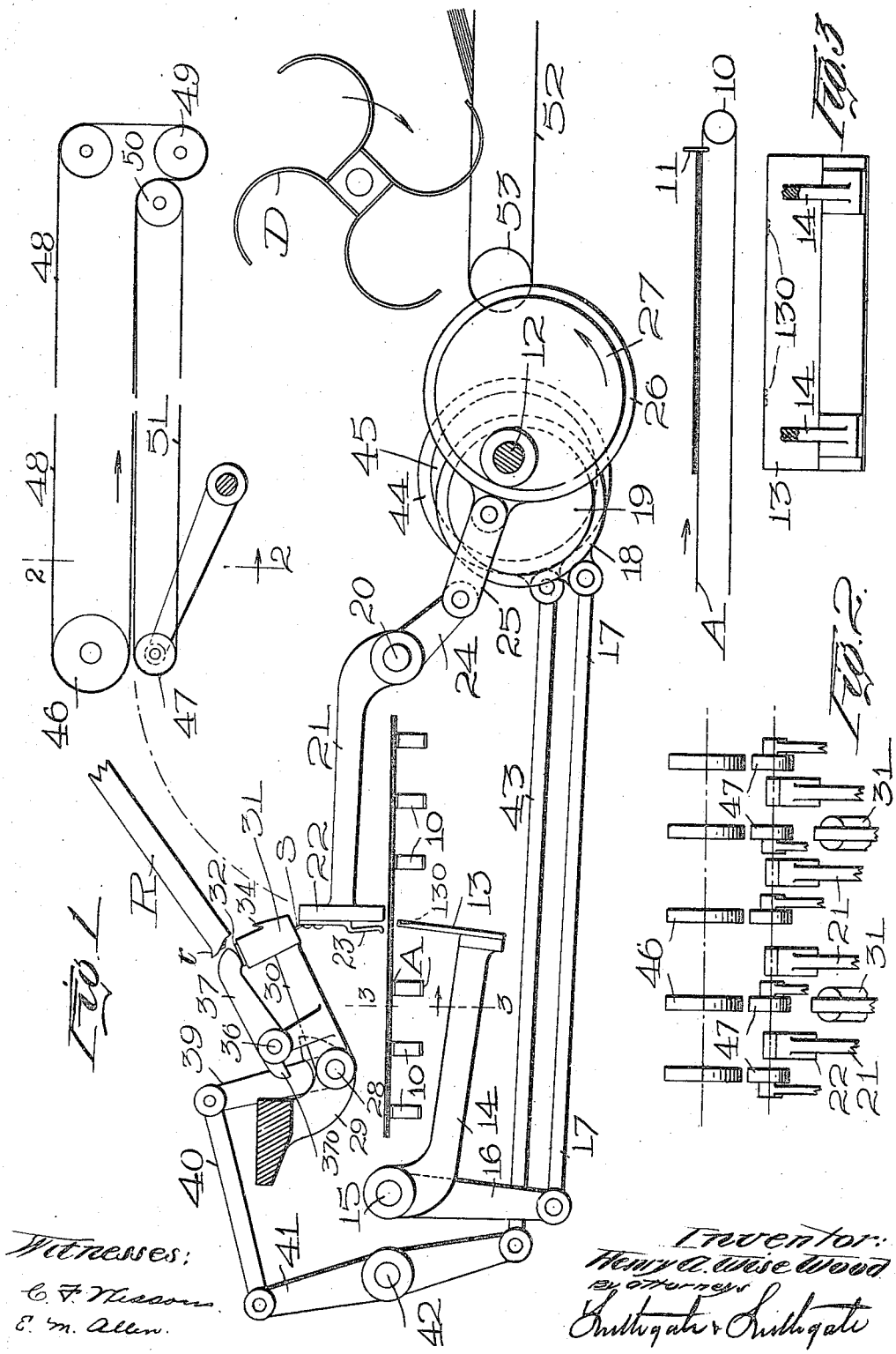


Fig. 1

Fig. 3

Fig. 2

Witnesses:

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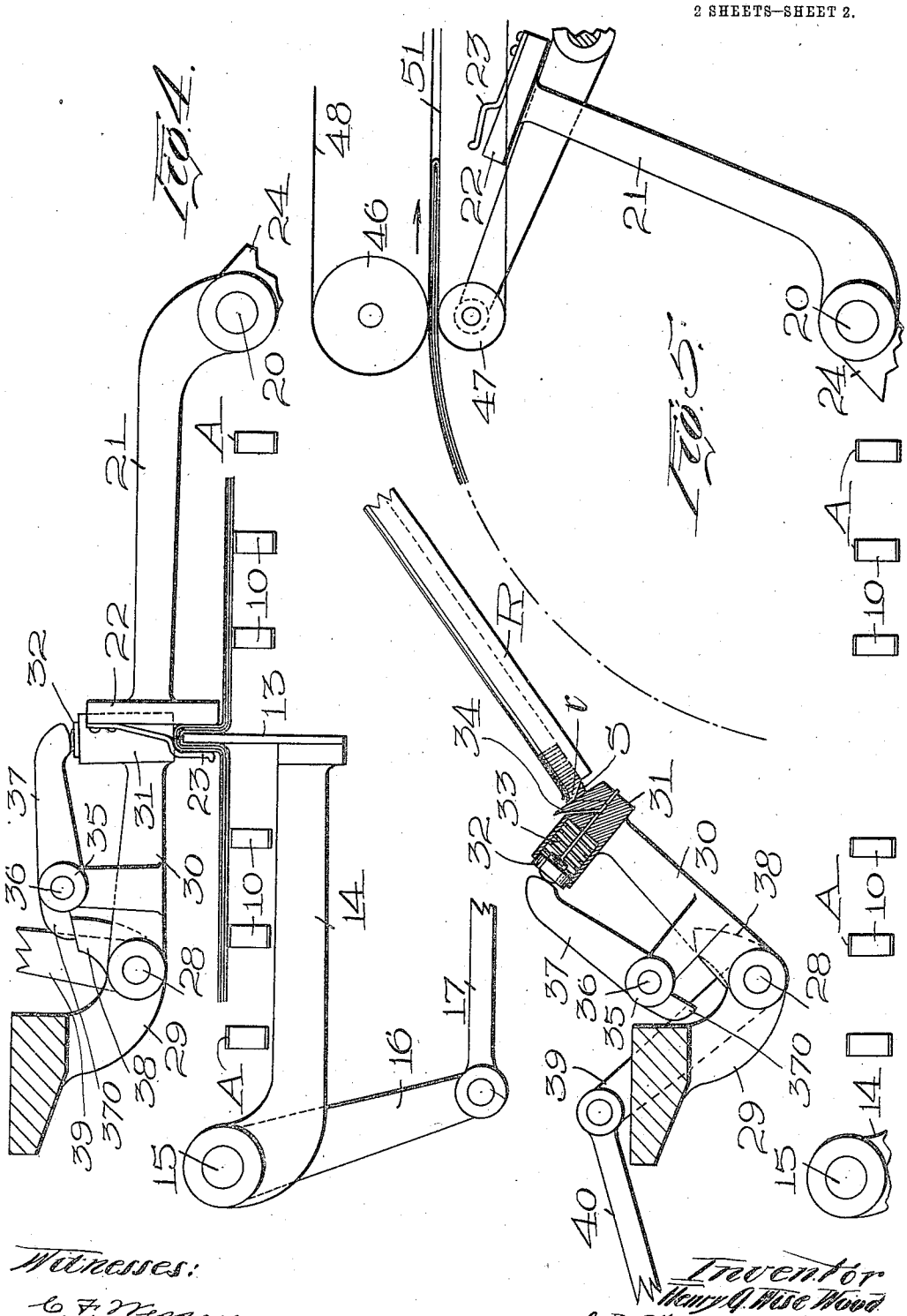
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UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO WOOD NEWSPAPER MACHINERY CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF VIRGINIA.

FOLDING AND STAPLING DEVICE.

1,124,375. Specification of Letters Patent. Patented Jan. 12, 1915.

Application filed February 11, 1910. Serial No. 543,302.

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Folding and Stapling Device, of which the following is a specification.

The object of this invention is to provide an improved folding and stapling device in which the stapling can be done without requiring any particular manipulation of the product.

To this end, the invention consists in combining with a folding mechanism, preferably a mechanism by which a fold is given to a number of collected sheets, of means for stapling the sheets together while the fold is being made.

One embodiment of the invention is illustrated in the accompanying two sheets of drawings which show in diagram enough of the mechansim to illustrate the operation thereof.

Figure 1 is a diagrammatic sectional elevation illustrating the parts. Fig. 2 is a partial sectional view taken on the line 2—2 of Fig. 1. Fig. 3 is a partial sectional view taken on the line 3—3 of Fig. 1. Fig. 4 is a partial view on an enlarged scale of some of the parts shown in Fig. 1, illustrating a different position thereof, and Fig. 5 is a partial view of some of the parts shown in Fig. 1 illustrating the delivery of the folded and stapled product.

Referring to the drawing and in detail, A designates a series of tapes upon which the collected sheets which are to be stapled are fed. These tapes pass around suitable pulleys 10 and are driven so as to advance the collected product against a stop 11.

12 designates a power shaft of the mechanism.

13 designates a folder blade which is mounted on arms 14—14 which are secured on a shaft 15 depending from which is an arm 16 which is connected by a link 17 to an eccentric strap 18 running on an eccentric 19 secured on said power shaft 12. By this mechanism, the folder or tucker blade will be operated to reciprocate vertically.

Mounted on a shaft 20 are arms 21 which have receiving heads 22 at their ends secured on which heads are spring clips or holders 23. Four receiving arms 21 are shown in the present instance. Also mounted on the shaft 20 is an arm 24 which connects by a link 25 to an eccentric strap 26 running on an eccentric 27 also secured on the power shaft 12. The receiving heads 22 and clips 23 of the arms 21 are arranged so that the folder blade 13 will drive and crease the collected sheets into the bite thereof, as shown in Fig. 4.

28 designates a shaft which is mounted in suitable brackets 29 secured to the framing of the machine. Extending from the shaft 28 is a number of stapling arms 30, two of said arms being shown in the present embodiment of the invention. Each of these arms has a head 31 at its end fitted in which is a plunger 32 held in retracted position by a spring 33. The plunger 32 is flat shaped and works in a slot in the head 31. The head 31 is provided with a catching hook 34 which on the upward movement of the head, is adapted to pick off a staple S from the end of a run-way R which has a lip r on which the staples hang. The run-way is provided with a slot or groove down which the staples can be fed from any of the usual feeding mechanisms. Each arm 30 is formed with a hub 35 from which projects a stud 36 journaled on which is a striking arm or hammer 37. An operating hub or cam 38 projects up from the bracket 29 and is arranged so that as the head descends, the rear end of the hammer 370 will engage said hub and force the hammer 37 down into the head 35, forcing downwardly the plunger 32 and driving the staple. On the upward movement of the head 31, the hammer will first clear the hub 38 so that on the upward movement, the catching lip 34 can take another staple from the lip r of the run-way.

The tucker or folder blade 14 is provided with small anvils or depressions 130 so arranged that as the staples are driven by the stapling heads 31, the points thereof will contact with these anvils and the legs of the staples will be set and turned. In general principle of operation, this stapling head is similar to that shown in patent granted to me September 1, 1908, No. 897,333.

Secured on the shaft 28 is an arm 39 which connects by a link 40 to one end of a link 41 pivoted on a fixed stud or shaft 42.

The other end of the lever 41 is connected by a link 43 to an eccentric strap 44 engaging an eccentric 45 on the power shaft 12. These parts are arranged so that just as the folder or tucker blade 13 starts the fold line in the collected sheets and tucks the fold into the bite of the receiving heads 22 and the spring clips 23, the stapling heads 31 will descend and powerfully engage the fold and drive the staples through the same, the ends of the staples clenching on the anvils on top of the folder or tucker blade 13. As soon as this operation takes place, the stapling heads 31 will move upwardly out of the way and the arms 21 will swing around forward and in between tape rollers 46 and 47.

Running around the tape rollers 46 is a set of tapes 48 which run around delivery rollers 49 and 50 and back to the tape rollers or pulleys 46. A second set of tapes 51 is arranged to run around the tape pulleys or rollers 47 and the delivery roller 50. By this arrangement, the stapled and doubled sheets will be carried into the bite of the tapes 48 and 51, as shown in Fig. 5, and then will be carried by these tapes out between the delivery rollers 49 and 50, which rollers will act to set and crease the fold previously started and stapled.

A rotary delivery device D may be arranged below the delivery rollers 49 and 50 so that the stapled and folded products may be delivered on to a set of delivery tapes 52 running around tape pulleys 53 from which they may be carried to any suitable part of the mechanism. By this arrangement, the collected sheets may be stapled together as they are folded and the operation can take place very powerfully and accurately.

The mechanisms are very accessible for the purposes of adjustments and repair. The eccentrics on the shaft 12 are timed to give the operations previously described. In place of using eccentrics, of course suitably designed cams can be employed to make the parts perform their functions to carry out the cycle of operation.

Many other arrangements may be devised for carrying out the principle of my invention without departing from the scope of the claims forming part hereof.

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

1. In a machine for folding sheets including in combination an oscillating folding blade, reciprocating folding jaws coöperating therewith to fold without cutting the sheets, means for moving said jaws upwardly to carry away the folded sheet, and a pair of rollers for receiving the folded sheet from the jaws when so moved upwardly.

2. A folding and stapling device, having in combination means to form a partial fold, a stapling device coöperating with said folding means to staple the partially folded product, and additional means for thereafter completing the fold.

3. A machine for folding sheets including in combination an upwardly movable folding blade, reciprocating folding jaws coöperating therewith, means for stapling the sheet while held by said jaws, means for moving said jaws to carry away the folded sheet, and means for receiving the folded sheet from the jaws and completing the fold.

4. The combination of means for advancing a collected product, a reciprocating folding blade adapted to engage and start a fold line in the product, means adapted to cooperate with the folding blade to staple the product after said fold line is started, and means for thereafter completing the fold.

5. A folding and stapling device, having in combination means to form a partial fold, a stapling device coöperating with said folding means to staple the partially folded product, a delivery mechanism and conveying means effective to complete the fold and to transfer the product to said delivery mechanism.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

H. A. WISE WOOD.

Witnesses:
EDITH A. BUTLER,
FRANK VON HALLE.