

No. 816,063.

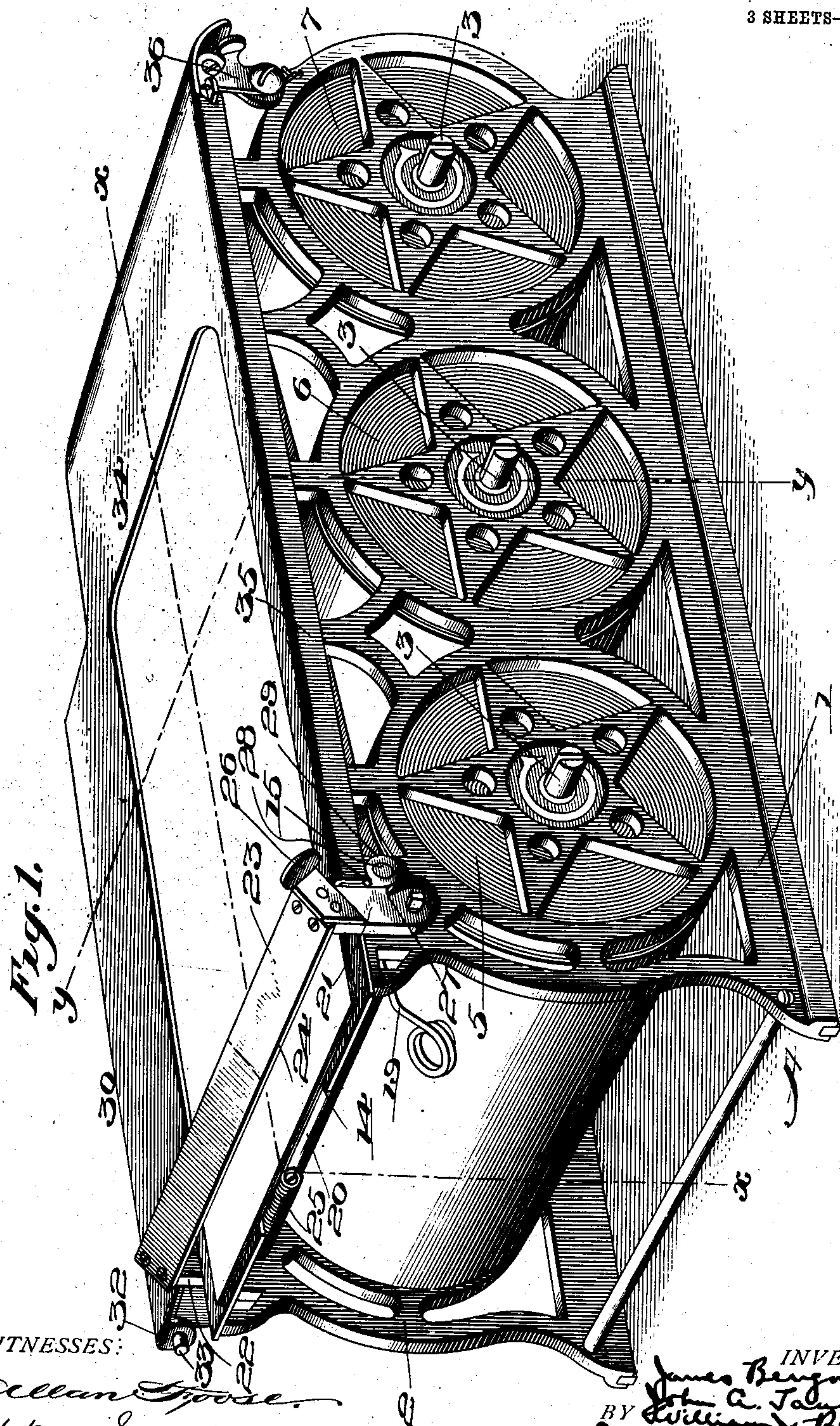
PATENTED MAR. 27, 1906.

J. BENGOUGH, J. A. TANSLEY & W. J. REIDELL.

MANIFOLDING APPARATUS.

APPLICATION FILED JULY 14, 1904.

3 SHEETS—SHEET 1.



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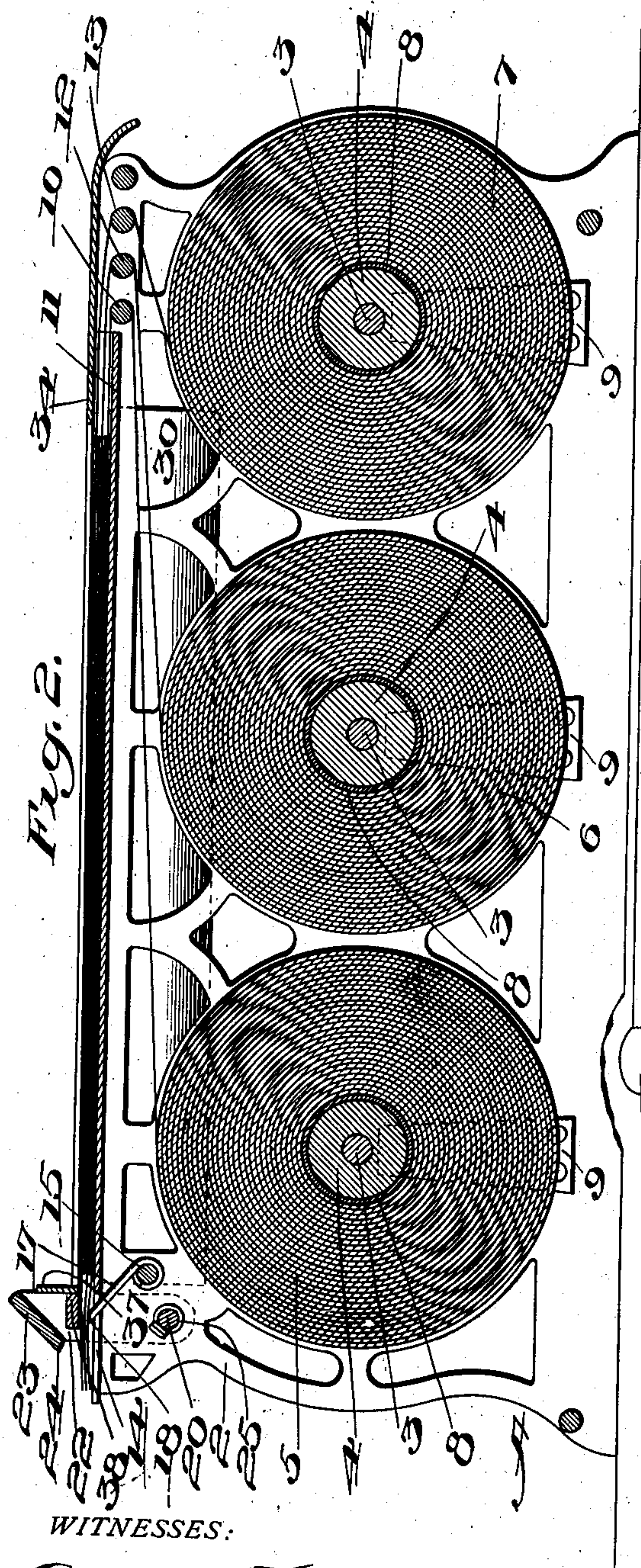


Fig. 2.

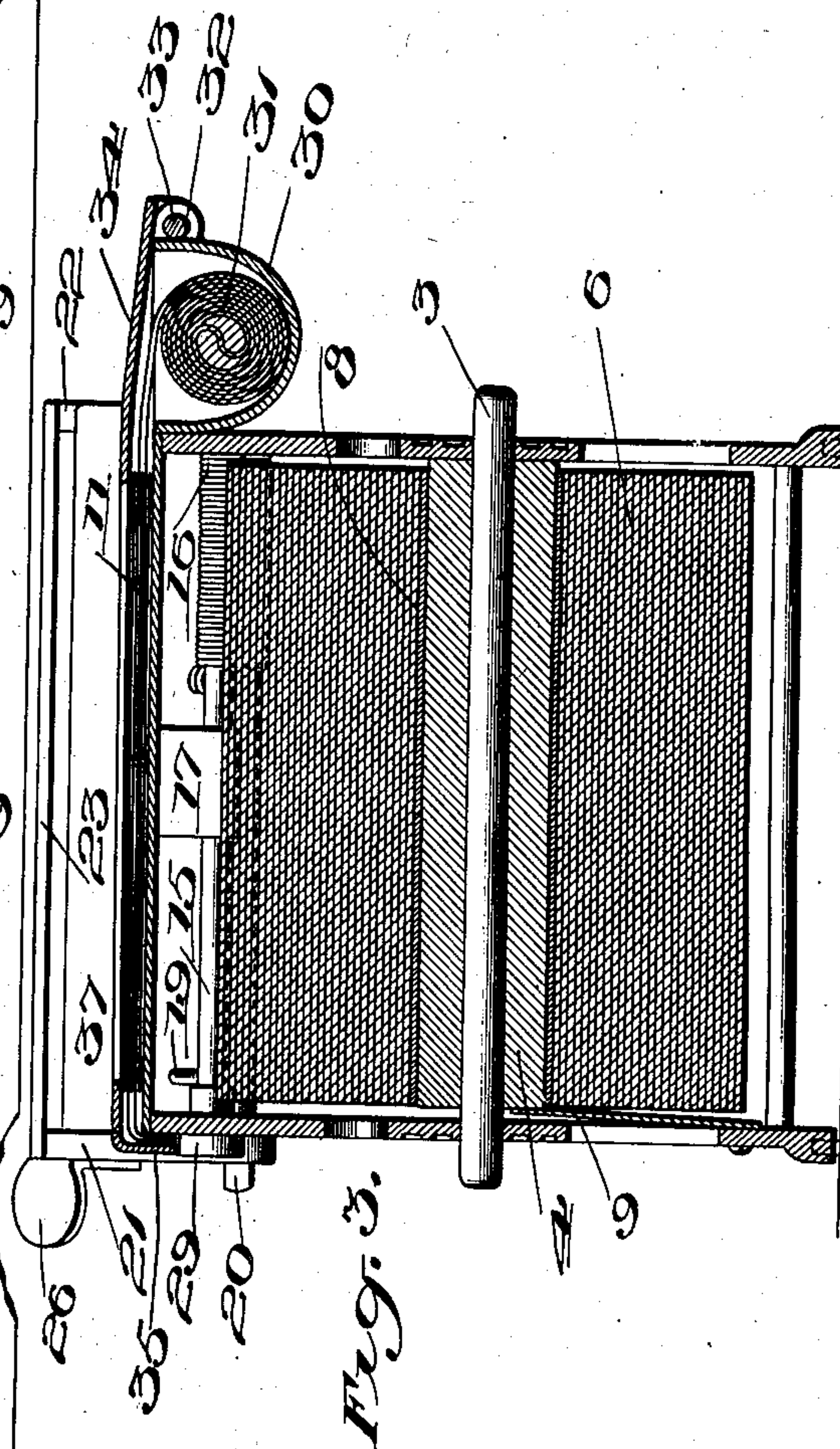


Fig. 3.

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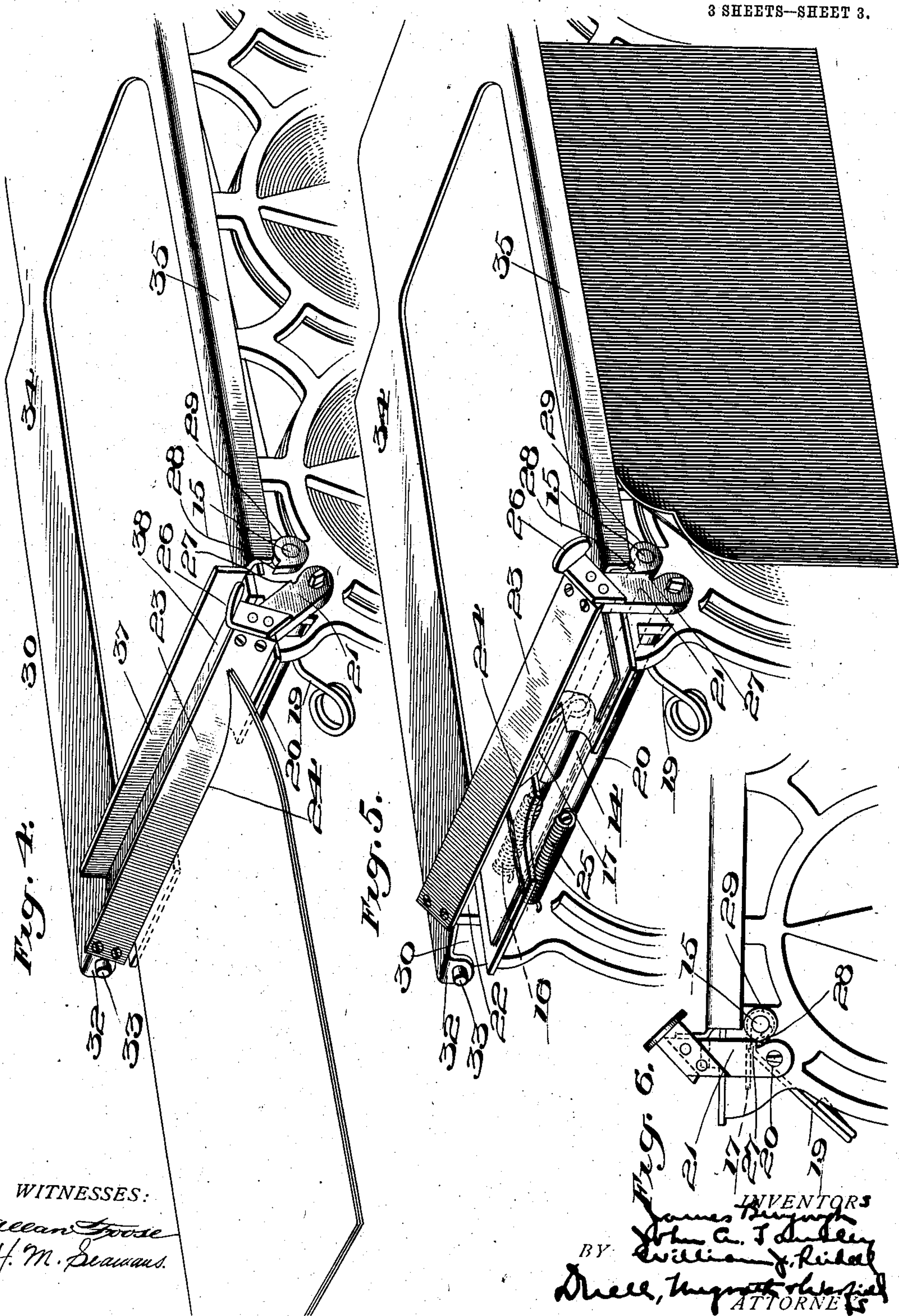
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE

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MANIFOLDING APPARATUS.

No. 816,063.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed July 14, 1904. Serial No. 216,490.

To all whom it may concern:

Be it known that we, JAMES BENGOUGH, JOHN ALMOND TANSLEY, and WILLIAM JOSEPH REIDELL, residing at Niagara Falls, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Manifolded Apparatus, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to manifolded apparatus. One of the objects thereof is to provide a means of obtaining several copies of a manuscript without the necessity for the frequent handling of the transfer medium and to provide means whereby the latter is readily replenished.

Another object is to provide an apparatus of the above type which has peculiar advantages with respect to the arrangement, guiding, removal, and renewal of the paper.

A broad object is to provide means whereby one or more copies of bills of lading, shipping-receipts, order-blanks, and other writings of this general nature may quickly and conveniently be made.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which are exemplified in the apparatus hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, which illustrate one of various possible embodiments of our invention, Figure 1 is a perspective view of the entire apparatus. Fig. 2 is a longitudinal section taken substantially on the line $x x$ of Fig. 1. Fig. 3 is a cross-section taken substantially on the line $y y$ of Fig. 1. Fig. 4 is a perspective view of a portion of the apparatus, showing the tearing edges in operative position and sheets of paper partially detached. Fig. 5 is a similar view showing a portion of a sheet of transfer-paper partially torn against the corresponding tearing edge. Fig. 6 is a detail elevation showing some of the mechanism by which a gripping member is placed in inoperative position.

Similar reference characters refer to similar parts throughout the several views.

In order better to understand the description of the embodiment of our invention herein given, it may be noted that it is a highly desirable feature in apparatus of this general type that the original sheet and the copies thereof may be detached immediately after making the same, so as to be in condition readily to be separated, and such disposition made of them as is desired. It is also a feature of importance that the several sheets of paper be held firmly with reference one to another while portions thereof are being detached, so as to prevent any relative slipping of the same. If it be attempted to use a construction in which the tearing-knife is always in operative position with relation to the paper, and particularly with a gripping or holding mechanism likewise continuously operative, it will be found that the passage through which the paper is to be fed is obstructed and the renewal or readjustment of the same inconvenient. Also if the transfer medium be used in the ordinary manner in apparatus of the general nature of that herein described it is necessary to raise the paper, insert the transfer medium, and readjust the paper, with consequent vexatious delay and soiling of the fingers. The above and other defects are remedied in constructions of the nature of that herein set forth.

Referring now to Fig. 1, A represents a rigid frame comprising suitably connected side members 1 and 2, which may be of any desired form, although that herein shown has been found to be peculiarly adapted for the apparatus. Mounted within openings in the side members are pins or spindles 3, which may be held in position in any desired manner, but as herein shown have their ends split and sprung apart, so as to engage the openings in which they are positioned with considerable firmness. Upon these pins are filler-blocks 4, upon which are mounted the rolls 5, 6, and 7, which are formed upon tubes 8, so as to do away with the central portions of the roll and avoid the consequent loss of paper due to curling in the heart thereof. The movement of these rolls is retarded by means of flat springs 9, secured to the frame member 2, as shown in Fig. 2, and normally press-

ing against the ends of tubes 8. In this manner the excessive freedom of movement of the rolls is obviated. From roll 5 the paper is led over a guiding-roller 10, as shown in Fig. 2, and thence over the upper member or bed 11 of the frame. The paper from rolls 6 and 7 is fed in a similar manner over the guiding-rollers 12 and 13 and passes over the bed 11, resting smoothly upon the paper from roll 5. At the end of the bed adjacent roll 5 is a recess 14, which permits the ready seizing of the paper in order to draw the same from the apparatus, as hereinafter described.

Mounted upon frame A immediately below the end of bed 11, in which recess 14 is formed, is a pin 15, about which is coiled a spring 16. Upon the center of this pin is fixed a flat plate or gripper 17, normally held by spring 16 in a position with its upper edge 18 pressing against the lower surface of the paper through the rear portion of the recess 14. At the end of pin 15, opposing spring 16, is a lever-arm 19, rigidly mounted upon the pin or spindle and by means of which the same may be moved, so as to draw the gripper 17 from contact with the paper. A second pin or spindle 20 is mounted adjacent pin 15 and has positioned at either end lever-arms 21 and 22, connected by a plate or bar 23, having a tearing edge 24. This plate is normally held in its upper position by means of a spring 25, coiled about spindle 20 and secured to the frame member 2, substantially as shown. Lever 21 is preferably provided with a thumb-piece 26, by means of which the plate 23 may be pressed downwardly against the paper upon bed 11, so as to enable the same readily to be torn against the edge 24 thereof at this point. Upon lever 21 is cut a tooth 27, adapted to coact with a corresponding tooth 28 upon a collar 29, which is fixed to the end of spindle 15. In this manner it will readily be seen that upon the depression of lever-arm 19 the tooth 28 will be engaged by tooth 27 upon lever 21, the same being normally held in its uppermost position by means of spring 25, and the gripper 17 will thus be retained in an inoperative position. It will be noted, however, that upon the depression of lever 21 so as to bring the edge 24 in operative position the tooth 28 upon collar 29 will be released, and the gripper will be consequently thrown upward, so as to engage the paper and hold the same during the tearing operation.

Mounted upon the side member 2 of frame A is a casing 30, adapted to contain a roll of transfer-paper or other transferring medium 31. By the expression "transfer-paper" or "transferring medium" as used throughout this description and the following claims is meant any medium adapted upon pressure being transmitted to the same to make a mark corresponding in position to such pressure upon any writing-surface with which it may be in contact. In the construction

shown this roll is doubly wound, so as to provide a transfer-sheet for insertion between each of the three sheets of paper herein described. It will be understood, however, that this apparatus may be used for duplicating instead of triplicating, if desired, in which case a single sheet of transfer-paper only will be required. It will also be obvious that as many rolls of paper may be used as there are copies desired and that in any case the number of sheets in the roll of transferring material would be made to correspond thereto, and it will also be understood that, if desired, one of the sheets may be of thin paper and a double-faced transfer-sheet be used in conjunction therewith. Fitting the outer edges of casing 30 are projecting perforated lugs 32 and through which passes a pin or hinge-rod 33. Pivotaly mounted upon this hinge-rod by means of lugs 32 is a cover or top plate 34, adapted to inclose the casing 30 and extend entirely over the bed 11 and having a downturned flange 35, which serves as a tearing edge for the transfer material. This cover is held in its closed position by means of a spring-catch 36 of any desired form and is provided at the end adjacent the tearing member 23 with an upwardly-extending flange 37, which is adapted to serve as a stop for the same. The opposite end of the cover extends over the guiding-rollers 10, 12, and 13, and the central portion is cut away, so as to expose the surface of the upper sheet of paper. It will thus be seen that this cover tends to hold the several sheets of paper with the transferring medium inserted therebetween smoothly upon bed 11, and it is assisted in performing this function at the end adjacent the tearing member 23 by means of a cross-bar 38, detachably connected to frame A and spaced slightly from bed 11, so as to permit the paper to pass below the same.

The operation of this embodiment of our invention is as follows: The several supply-rolls 5, 6, and 7 having been placed in operative position with the spring members 9 pressing firmly against the same, the ends are carried over the corresponding guiding-rollers, as shown in Fig. 2 of the drawings, and thence to the upper surface of the bed 11. The transfer material is then drawn from roll 31 and inserted between the several sheets of paper extending slightly beyond the edge of the bed 11. The arm 19 is then depressed until tooth 28 is engaged by tooth 27 and the gripper is in inoperative position, as before described, the tearing-plate 23 being held in its uppermost position by means of spring 25. A clear passage is now provided for the ready insertion of the several sheets of paper beneath bar 38 and out to a position flush with the edge of the bed. The cover 34 is then closed and the flange 35 clasps the edge of the transfer-paper and holds the same firmly in position. The gripper 17 may now be re-

leased by means of a slight depression of lever 21, and the apparatus is in condition for use, the several sheets of paper being held firmly by this member in conjunction with the cover plate before described. Any desired record may now be made upon the exposed sheet of paper and the same will be transmitted to the other sheet or sheets by means of the transferring medium in an obvious manner. The ends of the several sheets of paper may now be seized at the point where they extend over the recess 14 of the bed 11 and may be simultaneously withdrawn to any desired extent. During this operation they are firmly held and relative sliding of the same prevented by means of the gripper 17, as above indicated. When these members are withdrawn to the desired extent, the tearing-bar 23 is depressed by means of thumb-piece 26, which may readily be accomplished, as one hand only is required in the withdrawing of the paper. The edge 24 compressing the paper firmly against bed 11 permits the same readily to be torn at this point, and the original and several copies are thus detached and any desired disposition may be made of the same. This operation may be repeated as often as desired, and when the transfer-paper becomes used to such an extent that it is desirable to replenish the same it is necessary merely to release the catch 36, raise cover 34, and draw the transfer material in a direction at right angles to the direction of delivery of the paper. When such an amount of transfer material has been withdrawn as to entirely replace that portion of the same which lies between the several sheets of paper, the cover 34 is closed and latched in position and the used transfer-paper may be torn against the edge of flange 35, as shown in Fig. 5 of the drawings. The paper may then be again used as desired until the rolls are exhausted, in which case new rolls are inserted in an obvious manner.

It will thus be seen that we have provided a simple, durable, and inexpensive piece of apparatus which is convenient to use and the material used in which may be replenished with great ease. It will also be seen that a clear passage is provided through which the paper may be fed, and yet the several sheets of the same are firmly held in their proper relative position while it is being used, withdrawn, and detached. The advantages of the springs 9 which press against the supply-rolls will readily be seen, as they tend to prevent the loosening of the several sheets of paper and consequent disarrangement of the same.

It will be understood that this mechanism is not limited in its use to paper, but any medium upon which writing or printing may be made may be therein utilized and the word "paper" as used throughout the following claims is intended to comprehend any such substitution.

As many changes could be made in the above construction and many apparently widely different embodiments of our invention could be made without departing from the scope thereof, we intend that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. We desire it also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In manifolding apparatus, in combination, means adapted to supply a continuous sheet of paper, spring-pressed means adapted to grip said paper, a tearing-bar movably positioned with reference to said paper, and engaging means between said tearing-bar and said spring-pressed means comprising means for interlocking and releasing the same without bringing the tearing-bar into operative position.

2. In manifolding apparatus, in combination, means adapted to supply a plurality of continuous sheets of paper, spring-pressed means adapted to grip said paper, a tearing-bar movable with reference to said paper, locking means upon said spring-pressed means, and coacting locking means upon said tearing-bar adapted to engage and interlock with said first locking means.

3. In manifolding apparatus, in combination, means adapted to supply a plurality of continuous sheets of paper, a spring-pressed member adapted normally to engage and compress said paper, a pair of arms pivotally mounted with reference to said paper, a tearing-bar mounted upon said arms, means connected with said spring-pressed member, and coacting means upon one of said arms adapted to engage and interlock therewith.

4. In manifolding apparatus, in combination, means adapted to supply paper, a member having a tearing edge normally spring-pressed into inoperative position and adapted to be moved into an operative position with reference to said paper, and a spring-pressed member adapted normally to engage and compress said paper, said members being provided with means adapted to hold said last-mentioned member in inoperative position out of contact with said paper.

5. In manifolding apparatus, in combination, means adapted to supply a continuous sheet of a transferring medium, means adapted to supply a plurality of continuous sheets of paper in operative relation to said transferring medium, a member having a tearing edge operatively positioned with respect to

said transferring medium upon the side of said paper opposite said first-mentioned supplying means, a member having a tearing edge normally spring-pressed into inoperative position and adapted to be moved into operative position with reference to said paper upon the side of said transferring medium opposite said second-mentioned supplying means, and a spring-pressed member adapted normally to engage and compress said paper, said two last-mentioned members being provided with a catch adapted to hold said spring-pressed member in inoperative position out of contact with said paper.

6. In combination, means adapted to support a sheet of paper, a member provided with a tearing edge mounted adjacent said sheet of paper and normally spring-pressed into inoperative position, and a member adapted to engage and press against said sheet, said members having means controlled in accordance with the position of said first member adapted to hold said second member in inoperative position.

7. In combination, means adapted to support a sheet of paper, a member provided with a tearing edge mounted adjacent said sheet of paper and normally held in inoperative position, a spring-pressed member normally engaging and pressing against said sheet, a catch adapted to hold said spring-pressed member in inoperative position, and a connection between said catch and said first-mentioned member whereby said catch is released upon the movement of said first-mentioned member to operative position.

8. In combination, a supporting-bed, means adapted to supply a plurality of sheets of paper upon said bed, a pair of arms pivotally mounted with reference to said bed, a tearing-bar connected with said arms, and a spring-pressed member, said spring-pressed member having means adapted to engage and interlock with one of said arms and maintain itself in inoperative position.

9. In combination, a frame, a bed mounted thereon, means adapted to supply a plurality of sheets of paper to said bed, means adapted to supply a sheet of a transferring medium between two of said sheets of paper, a pair of arms pivotally mounted upon said frame, a tearing-bar connected with said arms adapted to be forced into contact with said paper, a spring-pressed member adapted to engage and compress said paper, a spindle upon which said spring-pressed member is fixed, a collar upon said spindle, and a tooth upon said collar adapted to engage a corresponding part upon one of said arms and to lock said spring-pressed member in inoperative position.

10. In combination, a frame, a bed, means adapted to serve a plurality of sheets of paper upon said bed in one direction, means adapted to serve a sheet of a transferring medium upon said bed in another direction, a cover adapted to fit said frame, a tearing edge upon said cover adapted to coact with said sheet of a transferring medium, a pair of arms pivotally mounted upon said frame, a tearing-bar connecting said arms, said tearing-bar being adapted to be forced into engagement with said paper, a spring-pressed member adapted to engage and compress said paper, a member to which said spring-pressed member is fixed, and means upon said last-mentioned member adapted to engage with coacting means upon one of said arms and retain said tearing-bar and said spring-pressed member in inoperative position.

In testimony whereof we affix our signatures in the presence of two witnesses.

JAMES BENGOUGH.

JOHN ALMOND TANSLEY.

WILLIAM JOSEPH REIDELL

Witnesses:

GEORGE A. INGRAM,
J. E. SILENCE.