No. 675,877. Patented June 11, 1901.

W. J. ARNEY.

BANK BILL CUTTER.

(Application filed May 18, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

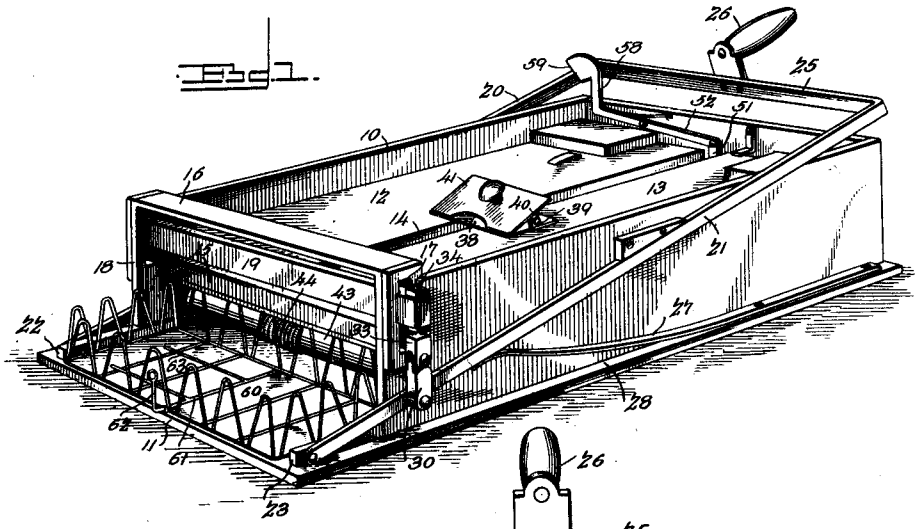


Fig. 2.

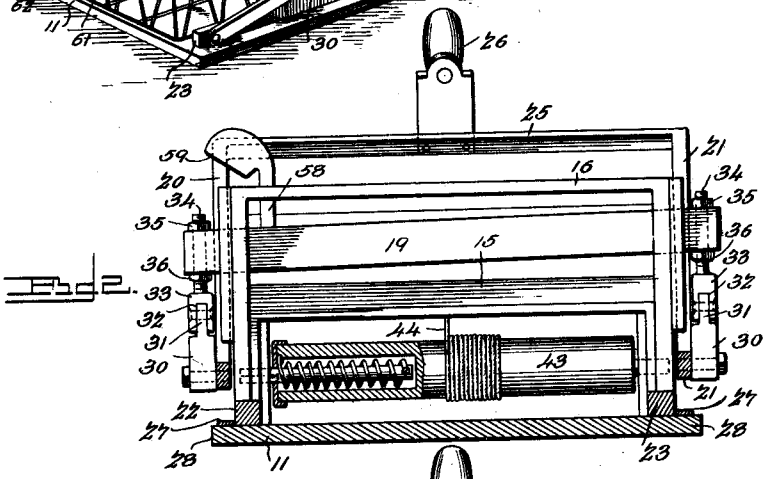
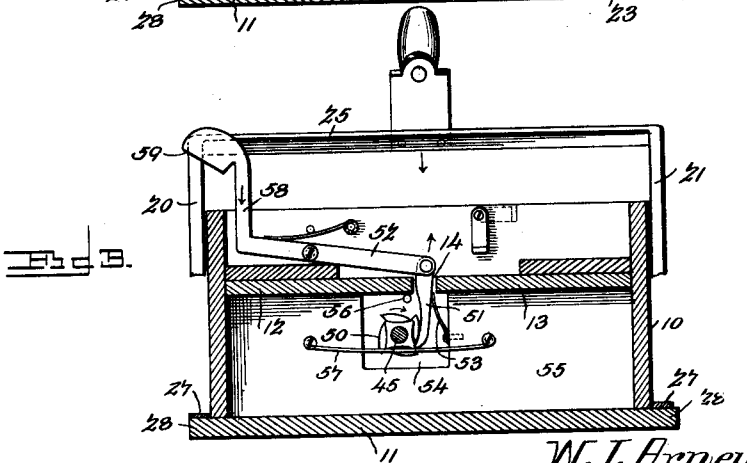


Fig. 3.



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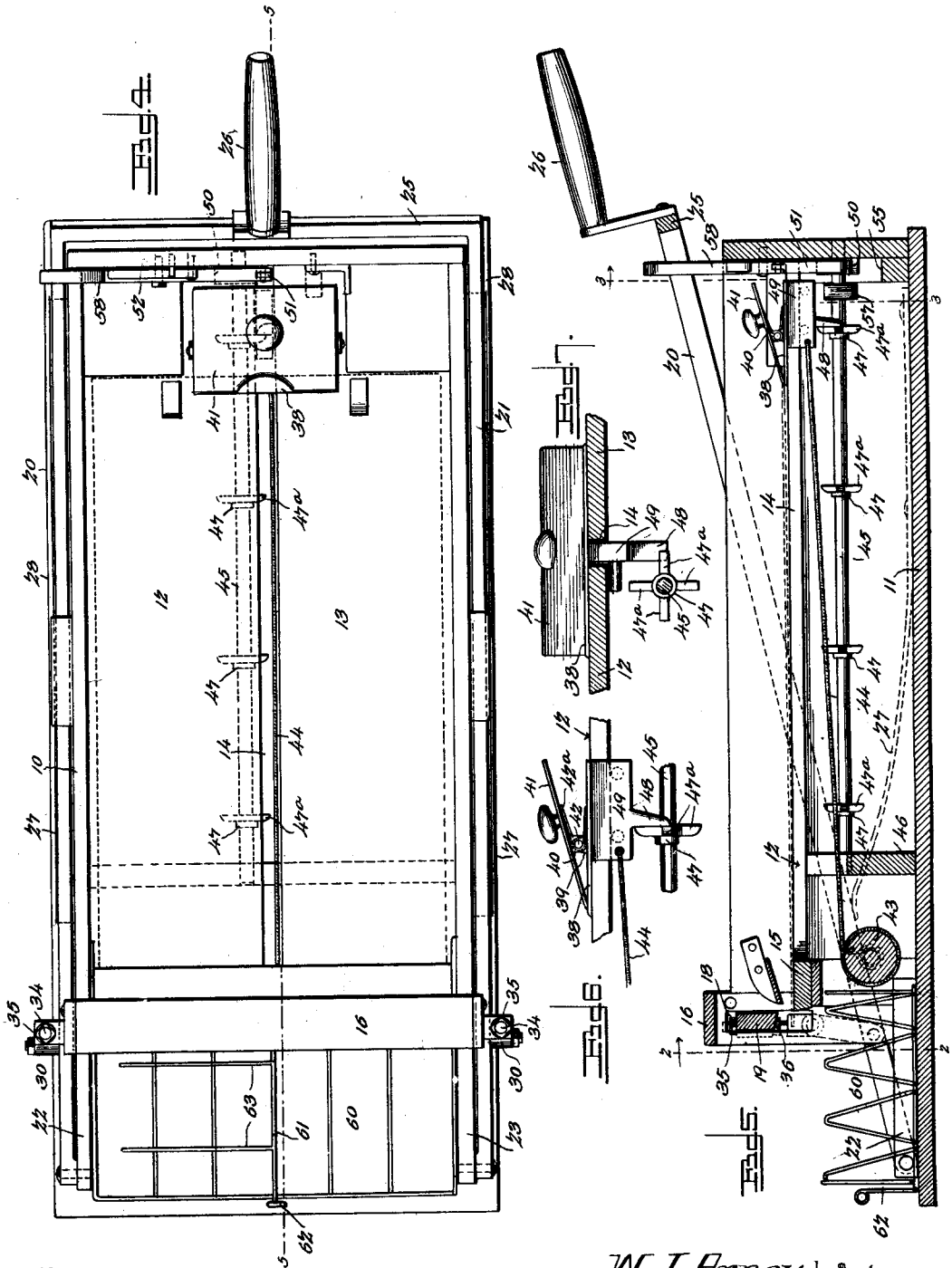
No. 675,877. Patented June 11, 1901.

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BANK BILL CUTTER.

(Application filed May 18, 1900.)

(No Model.) 2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

WILLIAM JAMES ARNEY, OF PORT ALLEGANY, PENNSYLVANIA.

BANK-BILL CUTTER.

SPECIFICATION forming part of Letters Patent No. 675,877, dated June 11, 1901.

Application filed May 18, 1900. Serial No. 17,146. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM JAMES ARNEY, a citizen of the United States, residing at Port Allegany, in the county of McKean and State of Pennsylvania, have invented a new and useful Bank-Bill Cutter, of which the following is a specification.

This invention relates to paper-cutters in general, and more particularly to the class employed in the cutting of sheets of bank-notes, one object of the invention being to provide a simple and efficient apparatus wherein a sheet of notes may be advanced with a step-by-step movement to a cutter-knife to cut the sheet and separate the notes.

A further object of the invention is to provide such details of structure as will insure the efficiency of the apparatus and will permit it to be manufactured at a low cost.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a perspective view showing the entire apparatus ready to receive a sheet to be cut. Fig. 2 is a transverse section taken in advance of the feed-roll and looking rearwardly, a portion of the roll being shown in section to illustrate its rotating spring. Fig. 3 is a transverse section on line 3 3 of Fig. 1 and showing the mechanism for operating the release-shaft. Fig. 4 is a top plan view of the complete mechanism. Fig. 5 is a central longitudinal section on line 5 5 of Fig. 4. Fig. 6 is a detail side elevation of the sheet-clamp and showing adjacent portions of one side of the slot in which it operates and of the releasing mechanism. Fig. 7 is a section taken transversely of the bottom of the hopper in advance of the sheet-clamp and showing the depending lug of the clamp and the coöperating releasing mechanism.

Referring now to the drawings, the present invention consists of a box or hopper 10, mounted upon a base 11, said box or hopper having one end open and beyond which open end the base projects. The hopper has a false bottom comprising two sections 12 and 13, which are separated by an interspace or slot 14 and at the front end of this bottom, which is the open end of the hopper, is fixed a knife 15. At the front end of the hopper is fixed an inverted-U-shaped frame 16, the sides of which lie with their inner faces slightly beyond the inner faces of the sides of the hopper, and in the sides of this frame are formed guide-slots 17 and 18, in which is mounted a reciprocatory knife 19, which is adapted for movement into and out of operative relation to the fixed knife 15, the knife 19 being held at an angle to the knife 15 in order that a shear cut may be made.

To operate the reciprocatory knife 19, levers 20 and 21 are pivoted at their front ends of the forwardly-extending feet 22 and 23 of the sides of the frame 16, which feet are located at the lower ends of the sides of the frame and are bolted securely to the base 10. The levers 20 and 21 extend rearwardly beyond the hopper and are connected by a cross-piece 25, provided with a handle 26, through the medium of which the levers may be simultaneously depressed, said levers being held normally and yieldably in raised position by means of strap-springs 27, which are attached at their rear ends to the laterally-projecting portions 28 of the base of the machine, and which springs lie with their forward ends bent upwardly and lying in slidable contact with the under sides of the levers.

Each end of the knife 19 is adjustably connected with the adjacent lever by means of a hinge connection comprising a block 30, which is rigidly attached to the lever and has a transversely-perforated stem 31, which lies in the longitudinal slot 32 of the head 33 of a bolt 34, which is passed upwardly through a perforation in the end of the knife. A pivot-pin connects the stem or web of the block with the bolt-head, and nuts 35 and 36, engaged with the bolt above and below the knife, act to hold the knife adjustably rigid with respect to the bolt. Thus as the levers are oscillated through the medium of the handle the knife 19 is reciprocated and cooperates with the fixed knife to perform the cutting operation.

The sheets to be cut are advanced along the bottom of the hopper by a clamp, which is in turn operated by a spring-actuated feed-roller. The clamp comprises a plate 38, having upwardly-extending ears 39 at its sides

and which lie against the corresponding ears 40 of a coöperating plate 41, the mutually-adjacent ears being pivotally connected by a pin 42, about which is wound a spring-wire 42ª, having portions bearing against the inner faces of the clamping-plates in the usual manner to hold their forward edges yieldably in contact. The plate 38 has a depending block or lug 49, which lies in the interspace 14 and projects below the false bottom, upward displacement of the lug being prevented by transverse pins 42. A common form of spring-operated roller 43 is mounted at the forward end of the box and below the false bottom thereof, and upon this roller is wound a cord 44, attached at its opposite end to the block 49, the arrangement being such that the spring of the roller tends at all times to wind in the cord and advance the clamp to the knives.

In order to retain the clamp against movement and to permit it to advance with a step-by-step movement to properly feed the sheet to the knives, an escapement is provided and comprises a shaft 45, which is journaled in the rear end of the box 10 and in a transverse partition 46 below the false bottom of the hopper, and which shaft has a plurality of star-wheels 47 fixed thereon, the arms 47ª of which aline in series and are adapted to successively lie in the path of movement of the finger 48, which depends from the block 41. Thus if the finger 48 be engaged behind an arm of the rear star-wheel and the escapement-shaft be rotated said arm will move from engagement with the finger and the clamp will be permitted to advance under the influence of the spring-roller and will engage against the arm 48 of the succeeding wheel, provided the shaft has the proper degree of rotation. To insure this proper degree of rotation of the shaft, a ratchet-wheel 50 is fixed upon the shaft at the rear portion thereof, and coöperating therewith is a pawl 51, pivoted to the end of a lever 52, which is in turn pivoted upon the inner face of the rear end of the hopper, whereby when the lever is operated the pawl will be depressed and by engagement with the ratchet will rotate it a step. The pawl is held in engaging position with respect to the ratchet by means of a spring-plate 53, which is fixed to the inner face of a recess 54 in a reinforcement 55 of the rear end of the box, the pawl being held from excessive movement under the influence of the spring-plate by means of a pin 56, which is engaged with the rear end of the box. In order to hold the escapement-shaft in the proper position to insure engagement of the finger 48 with an arm of a succeeding star-wheel after each forward movement, the rear portion of the shaft is squared and bears against a spring-plate 57, the ends of which are loosely mounted upon studs upon the rear of the box. There are in the present instance four faces to this angular portion of the shaft, for the reason that there are four arms to each star-wheel, it being understood that the number of faces must correspond to the number of arms.

To rock the lever 52, an upright extension 58 is provided at its free end, and which extension has a cam-faced head 59, which lies in the path of movement of the lever 20, said face being so formed that when the lever strikes it in its upward movement the rock-lever will be operated to actuate the pawl and turn the escapement-shaft to release the clamp. It will thus be seen that with the downward movement of the levers 20 and 21 the knives will be operated, and with the upward movement thereof the escapement will be actuated to permit feeding of the sheet for a second cut. As the bills are cut from the sheet they fall over the fixed knife and into an inclosure 60, from which they may be raised by actuating a rock-shaft 61, having an operating-lever 62 lying exteriorly of the inclosure, and having fingers 63, which lie normally lowered against the bottom of the inclosure.

With this construction it will be seen that a sheet may be placed in the hopper in engagement with the clamp, and by actuation of the handle the sheet will be automatically advanced and cut with accuracy and speed.

While the present specification describes a device for cutting bank-notes, it will of course be understood that the principles involved may be applied to an apparatus for any specific purpose and that various modifications of the structure may be made and any suitable materials and proportions used without departing from the spirit of the invention.

What is claimed is—

1. A device of the class described comprising a cutter, levers connected with the cutter for operating it, a movable stock-clamp, means for moving the clamp to the cutter, a rotatable shaft having fingers for holding the clamp normally retracted, a ratchet carried by the shaft, a pawl for rotating the ratchet and therewith the shaft, and a cam-lever connected with the pawl and lying in the path of return movement of a cutter-operating lever, to actuate the pawl to rotate the shaft and release the clamp.

2. A device of the class described comprising a cutter, a stock-clamp movable toward and away from the cutter, means for exerting a continuous pull upon the clamp in the direction of the cutter, a finger upon the clamp, a shaft having a plurality of series of arms lying in the path of movement of the finger for engagement thereby to hold the clamp retracted, and means for rotating the shaft step by step to move the engaged arm from the finger and move an arm of a second series into the path of the finger, to permit step-by-step movement of the finger, and therewith the clamp.

3. A device of the class described comprising a cutter, a stock-clamp disposed for movement toward and away from the cutter and

having a depending finger, means for moving the clamp in the direction of the cutter, escapement mechanism for permitting step-by-step advancement of the clamp, said escapement mechanism comprising a rotatable shaft having radially-extending arms adapted to engage and release the finger of the clamp to feed it with a step-by-step movement, a cross-sectionally-angular block upon the shaft, a spring resting against the block to hold the shaft yieldably against movement, and actuating means for the cutter and escapement-shaft for actuating them alternately.

4. A device of the class described comprising a cutter, a stock-clamp, means for advancing the clamp to the cutter, an escapement for permitting step-by-step movement of the clamp by its moving means, levers connected with the cutter for operating it and a cam connected with the escapement and lying in the path of return movement of a lever for actuating the escapement.

5. A device of the class described comprising a fixed knife and a movable knife, operating-levers connected with the movable knife to move it in one direction operatively and to return it, a feed-clamp slidably mounted, a spring-roller, a flexible connection attached to the clamp and to the roller to move the clamp, an escapement operatively connected with the clamp to permit it to advance step by step under the influence of the roller, and a cam connected with the escapement and lying in the path of movement of a knife-operating lever for actuation thereby.

6. A device of the class described comprising a cutter having operating means, a stock-clamp slidably mounted and having a depending finger, a rotatable shaft having a plurality of series of radial arms, the arms of each series being disposed to successively project into the path of movement of the finger of the clamp, and means for rotating the shaft step by step to release the finger from an arm of one series and permit it to pass to an arm of a succeeding series.

7. A device of the class described comprising a cutter, levers operatively connected with the cutter, a slidable stock-clamp for feeding to the cutter, said clamp having a finger, a shaft having a plurality of series of radial arms disposed for the arms of each series to successively project into the path of movement of the finger as the shaft is rotated, a ratchet carried by the shaft, a pawl for operative engagement with the ratchet to rotate it, a lever connected with the pawl and having a cam portion lying in the path of movement of a cutter-operating lever for actuation thereby to rotate the shaft and release the finger, and means for advancing the clamp when the finger is released.

8. A device of the class described comprising a cutter having actuating means, a receiver to receive from the cutter and a discharging device comprising a rock-shaft disposed in the receiver, said shaft having radial arms adapted to lie against the bottom of the receiver and to project therefrom when the shaft is operated, and a crank for operating the shaft.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM JAMES ARNEY.

Witnesses:
CHARLES E. BARD,
W. J. MCGRANOR.