May 20, 1930. C. S. CHESSMAN 1,759,344

SHEET PAPER CUTTER

Filed Aug. 29. 1928

Fig 1

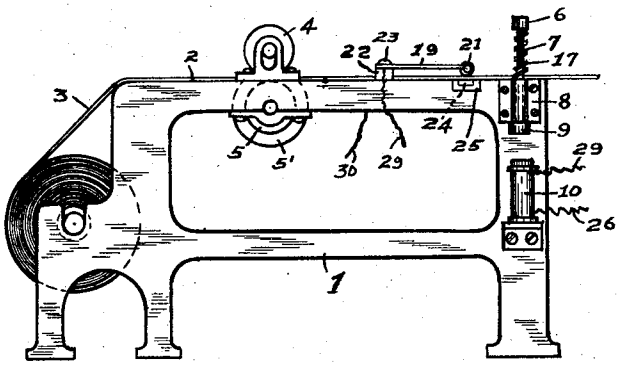
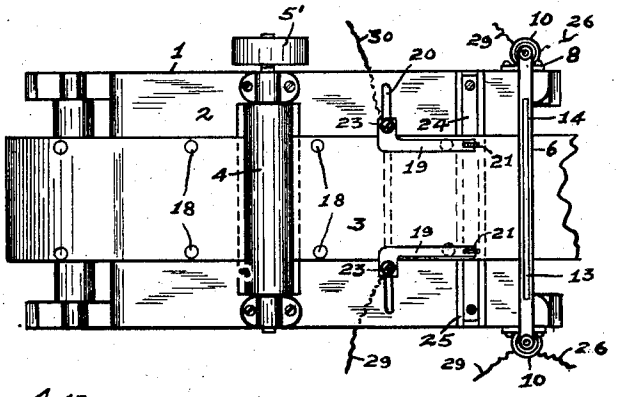


Fig 2



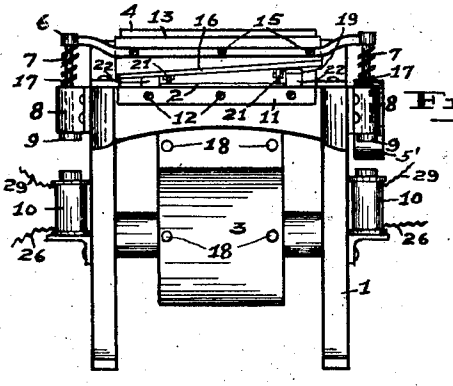
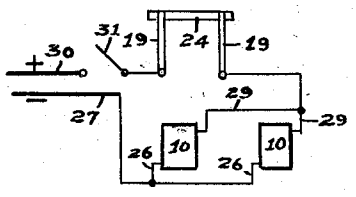


Fig 3

Fig 4



INVENTOR

Cedric S. Chessman

By Jack Snyder

attorney

Patented May 20, 1930 1,759,344

UNITED STATES PATENT OFFICE

CEDRIC S. CHESSMAN, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO ARTHUR J. DAVIS AND CHARLES D. DAVIS, BOTH OF PITTSBURGH, PENNSYLVANIA

SHEET-PAPER CUTTER

Application filed August 29, 1928. Serial No. 302,761.

My invention relates to a sheet paper cutter, and important objects thereof are to provide a paper cutter of the character described which is electro-magnetically operated, which is controlled by the movement of the paper being cut, which will facilitate and expedite the cutting operation with a minimum of attention, which will automatically suspend operation when the paper accidentally becomes misaligned and which will positively and accurately cut the sheets in exact predetermined lengths.

Further objects of the invention are to provide a device of the class stated which is simple in its construction and arrangement, durable and efficient in its use, and comparatively inexpensive to manufacture, install, operate and maintain.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter referred to, it being understood that changes in the precise embodiment of the invention hereinafter disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing wherein like numerals of reference designate corresponding parts throughout the several views:—

Figure 1 is a side elevational view of a sheet paper cutter constructed in accordance with the invention.

Figures 2 and 3 are, respectively, top plan and front views thereof.

Figure 4 is a diagrammatic view of the wiring arrangement involved in the operation of my improved device.

Referring in detail to the drawing 1 denotes a supporting table having a flat top 2. The sheet paper 3, to be cut in lengths, is removably mounted in rolls for rotation, at the rear end of the supporting table 1. The paper 3 is moved forwardly along the table top 2 by its engagement between a pair of transversely disposed feed rolls, respectively indicated at 4 and 5. The feed rolls 4 and 5 are suitably journaled for rotation on the table 1 and the roll 4 is disposed above and parallel to the roll 5. The latter is provided with a fixed driving pulley 5′ adapted for connection with the motive power for operating the feed rolls 4 and 5 to move the paper forwardly on the table top 2. It will, of course, be obvious that the rolls 4 and 5 may be arranged and driven in any other suitable manner, or that the paper 3 may be fed forwardly by any other suitable means.

The feature of the present invention resides in the sheet cutting element, which is positioned at the forward end of the supporting table 1. The cutting device includes a cross bar 6, which extends transversely across the forward end of the supporting table 1. The cross-bar 6 is carried by a pair of slide rods 7 which are connected to respective ends thereof, and slidably depend through respective slide bearings 8. The latter are fixed to respective sides of the supporting table 1 at the upper end of the latter.

Each of the slide rods 7 is formed at its lower end with an armature head 9, and an associated solenoid 10 is mounted at each side of the supporting table 1 directly below and in vertical alignment with respective armature heads 9.

A transversely disposed, stationary blade 11 is secured to the forward end of the table top 2, by means of countersunk screws 12. The stationary blade 11 has its upper or cutting edge disposed on an even plane with the table top 2. A transversely extending shearing blade 13 extends through a corresponding slot 14 formed in the cross arm 6. The shearing blade 13 is vertically adjustable in the slot 14 and is secured in the adjusted position in the cross-arm 6 by set screws 15. The shearing blade 13 has an angularly disposed lower or cutting edge 16 and operates against the outer or forward side of the stationary blade 11 during the cutting operation. The angular edge 16 of the blade 13 provides a shearing action for more effectively accomplishing the paper cutting operation.

A coil spring 17 is mounted on each of the slide rods 7 between the cross-bar 6 and respective slide bearings 8. The normal action of the springs 17 returns and maintains the cross-bar 6 and shearing blade 13 in the ele-

vated and inoperative position, as clearly shown in the drawing.

It will here be noted that my improved sheet paper cutter is primarily intended for cutting paper that has already been printed, as for instance, wrappers for commodities. This makes it essential that the paper be severed at the right point so that the printed matter be complete on each length of paper when cut from the roll. When printing the paper the marginal edges thereof are formed with perforations 18, which are regularly spaced and arranged in pairs, that is, a perforation at the marginal edge of one side of the paper is horizontally aligned with a similar perforation at the marginal edge of the other side of the paper.

A pair of resilient contact arms 19 are adjustably mounted in a horizontally disposed slot 20 which is formed in the table top 2 forwardly of the feed rolls 4 and 5. Each of the contact arms 19 is substantially L-shaped and carries a rotatably mounted contact wheel 21 at its forward end. The laterally disposed portions of the contact arms 19, are disposed outwardly and are mounted on insulating blocks 22 to insulate the contact arms 19 from the supporting table 1.

The contact arms 19 with associated insulating blocks 22 are maintained in position by means of securing screws 23. When in the adjusted position, the insulating blocks 22 are disposed at respective side edges of the paper 3 and serve as a guide for the latter as well as an insulating support for the contact arms 19. The contact wheels 21 travel on top of the paper 3 in the path of travel of the perforations 18 at respective edge margins of the paper 3.

A transversely disposed contact bar 24 is embedded in an insulating bar 25. The latter is in turn embedded in the table top 2 to dispose the top of the contact bar 24 on an even plane with the table top 2. The contact bar 24 is positioned directly beneath the contact wheels 21, and the latter normally have contacting engagement therewith. The arrangement of the contact arms 19 with associated wheels 21 not only provides contacting engagement to effect the cutting operation, as hereinafter described, but further serve to maintain the paper 3 flatly upon the table top 2 during its travel along the latter.

When the contact wheels 21 contact with the contact bar 24 through a pair of horizontally aligned perforations 18 in the paper 3, the solenoids 10 will be energized, whereby the cross-bar 6 and associated shearing blade 13 will be drawn downwardly against the actions of the springs 17, and effect the paper cutting operation. As soon as the engaged pair of perforations 18 have passed from under the contact wheels 21, the paper 3 will insulate the latter from the contact bar 24 thereby causing the de-energization of the solenoids 10 and permitting the return or elevation of the shearing blade 13 by the action of the springs 17.

The wiring arrangement for operating the cutting device herein described is clearly illustrated in Figure 4. The negative terminals 26 are joined to the negative main conductor 27, while the positive terminals 29 of the solenoids 10 are joined with one of the contact arms 19. The other contact arm 19 connects with the positive main conductor 30 through the control switch 31.

In the operation of my improved sheet cutter the paper 3 travels continuously forward, along the table top 2, by the operation of the feed rolls 4 and 5. Every time the contact wheels 21 contact with the contact bar 24 through a pair of aligned perforations 18 in the travelling paper 3, the solenoids 10 will be energized to effect the cutting operation.

It will be noted that both of the contact wheels 21 must contact simultaneously with the contact bar 24 to close the operating circuit. In the event that the paper 3 is not properly aligned, upon the table top 2, whereby one of the associated pair of perforations 18, of the paper, is disposed in advance of the other, the device will not function to effect the cutting operation until the proper alignment of the paper is established.

My improved sheet paper cutter provides a most efficient device of its kind which will accurately cut the paper into sheets of the same lengths regardless of slippage of the latter in the feed rolls 4 and 5.

What I claim is:

In a sheet paper cutter of the character described, the combination of a supporting table for the paper, a transversely disposed contact bar mounted in the top of said table and insulated from the latter, a stationary blade secured to the forward end of the table, and having its cutting edge disposed on the plane of the top of said table, a pair of slide rods slidably mounted for vertical movement at respective sides of said table, an armature head carried at the lower end of each of said slide rods, a cross-bar having its ends fixed to the upper ends of said slide rods, a shearing blade associated with said stationary blade and being adjustably connected in said cross-bar, a spring carried by each of said slide rods for normally maintaining said shearing blade in the elevated position, a pair of solenoids supported by said table and associated with respective armature heads, an operating circuit for energizing said solenoids, a pair of resilient contact arms adjustably mounted on said table and engaging respective side edge margins of the paper, said contact arms connecting with said operating circuit and being adapted for contacting with said contact bar through apertures provided

in the paper for closing the operating circuit to energize said solenoids for effecting the cutting operation, and means for feeding the paper forwardly through said stationary and shearing blades.

In testimony whereof I affix my signature.

CEDRIC S. CHESSMAN.