No. 873,226. PATENTED DEC. 10, 1907.

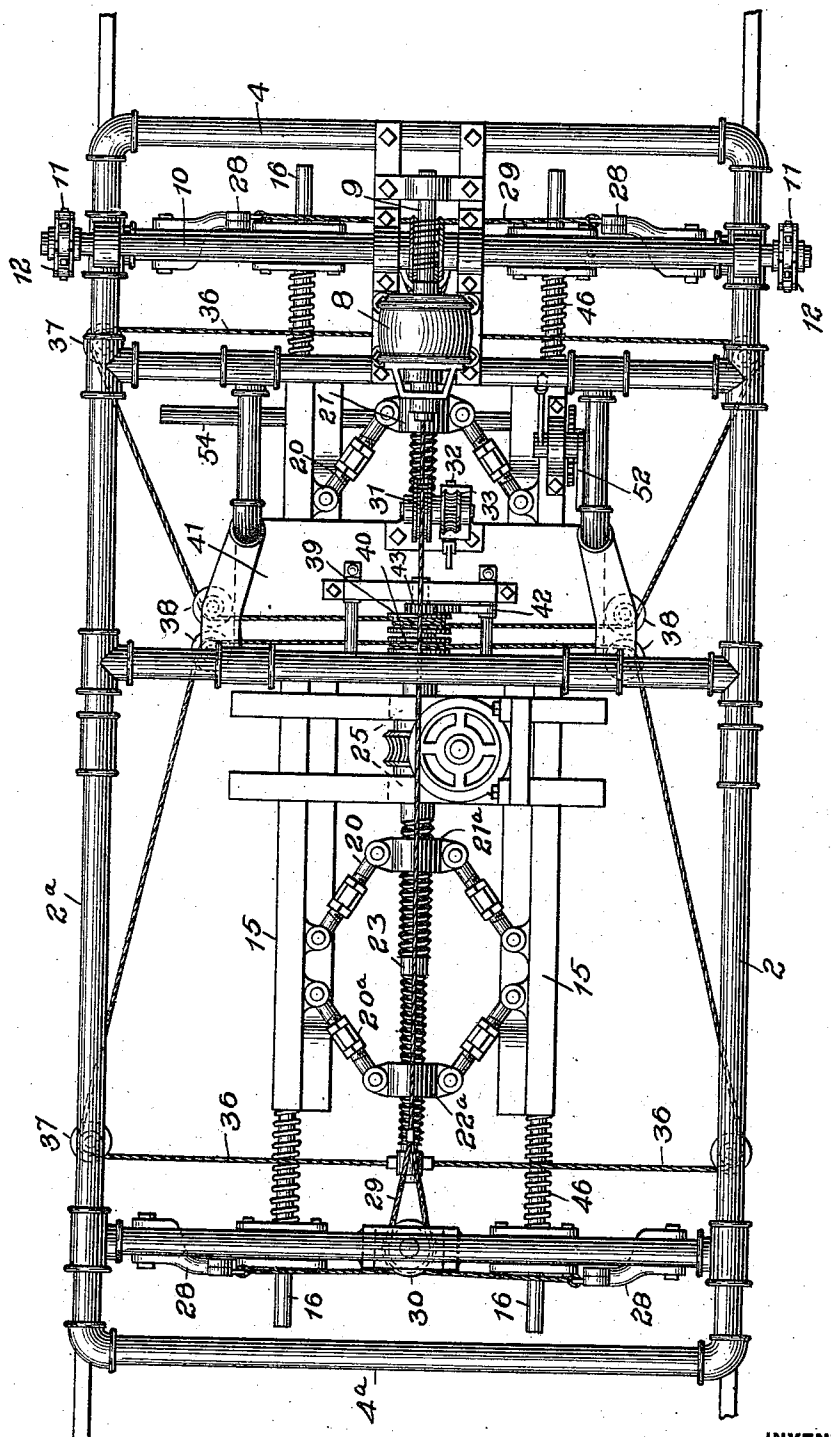
G. J. GERHARDT.

MECHANISM FOR MARKING SHEETS.

APPLICATION FILED JAN. 4, 1907.

4 SHEETS—SHEET 1.

FIG. 1.



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4 SHEETS—SHEET 2.

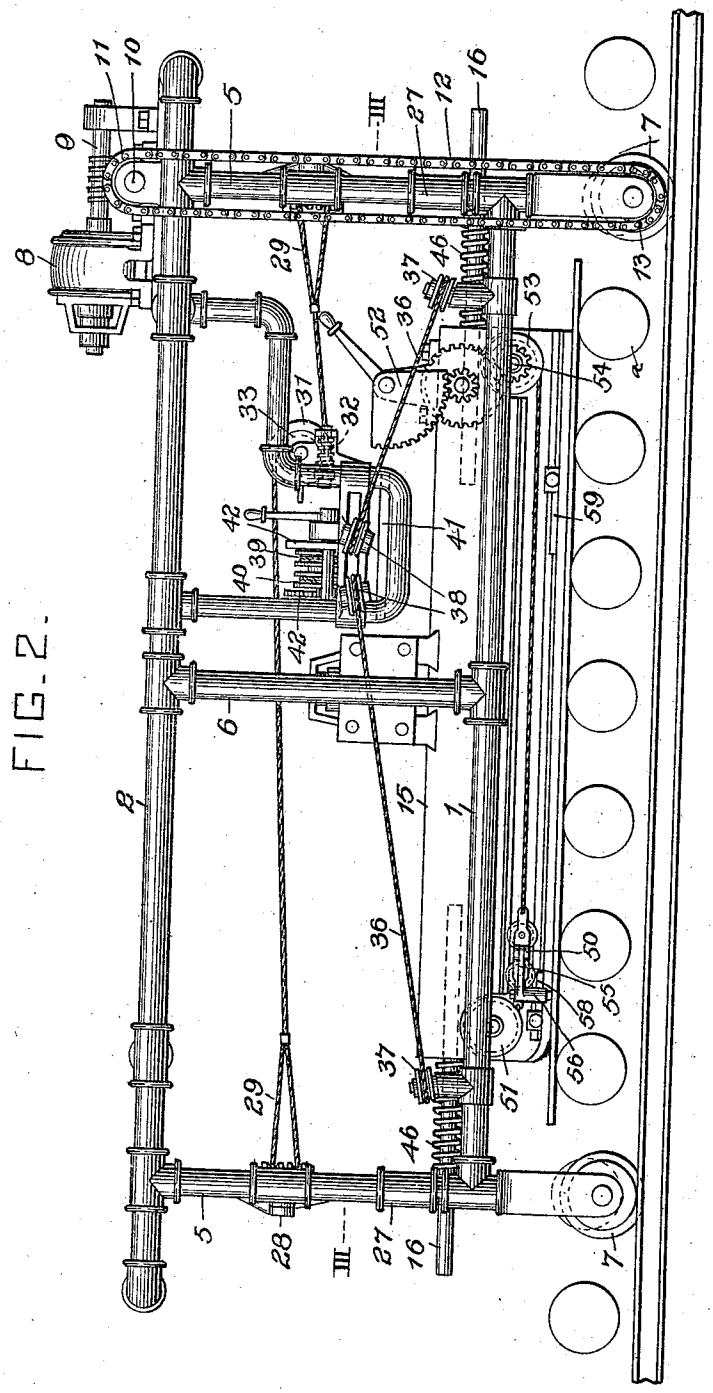

FIG. 2.

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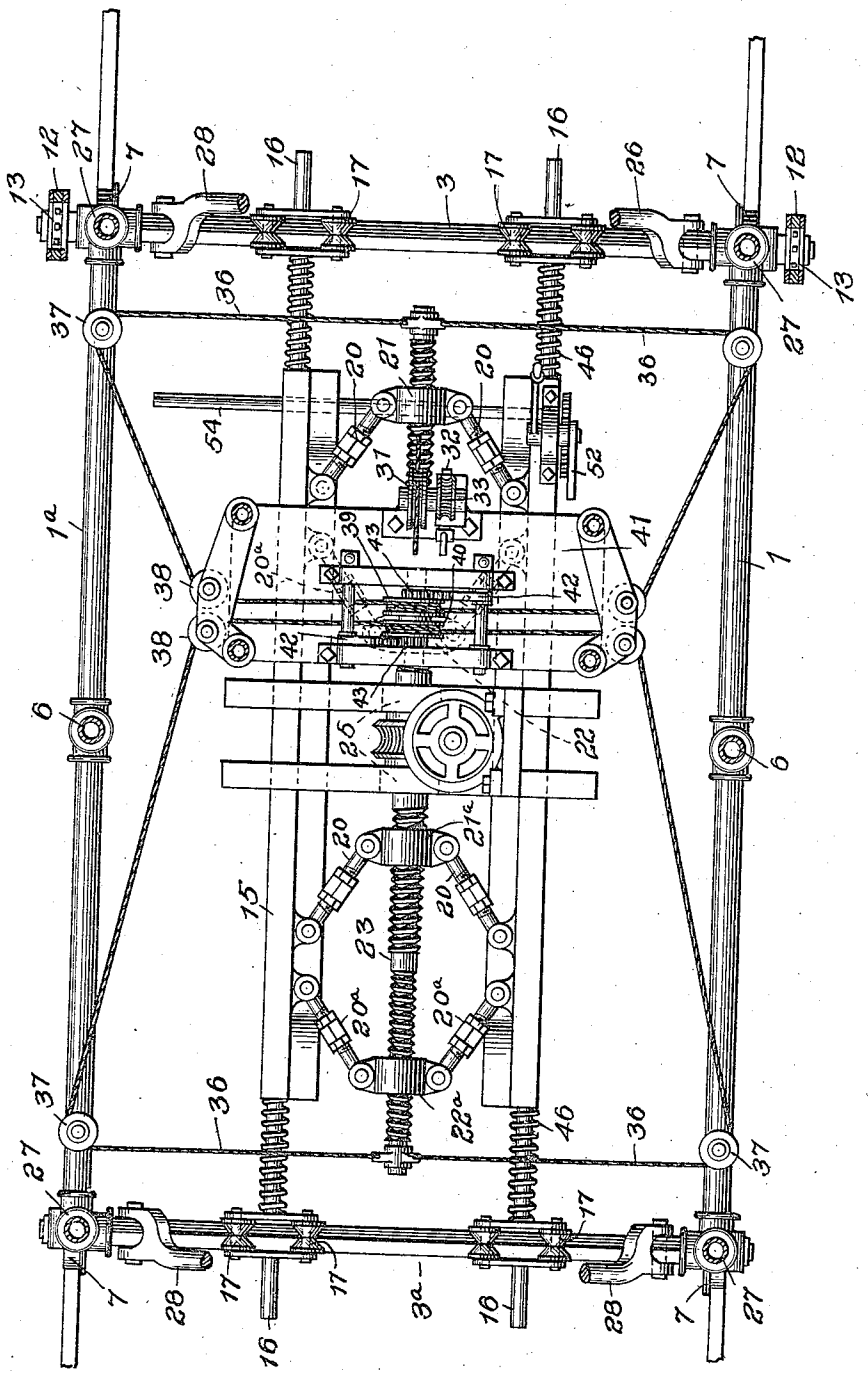
4 SHEETS—SHEET 3.

FIG. 3.



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4 SHEETS—SHEET 4.

FIG. 4.

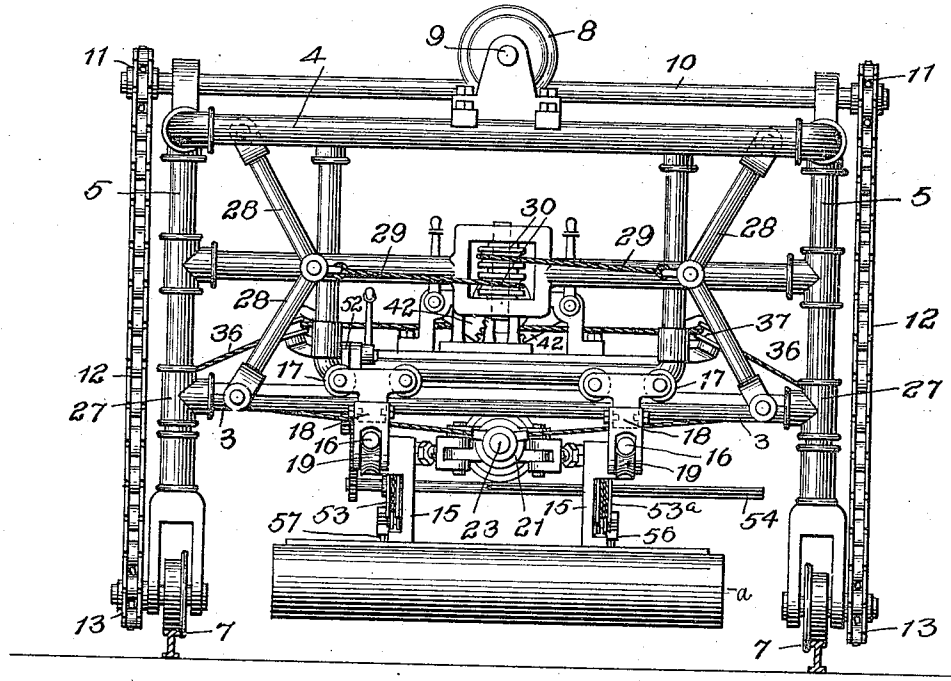


FIG. 5.

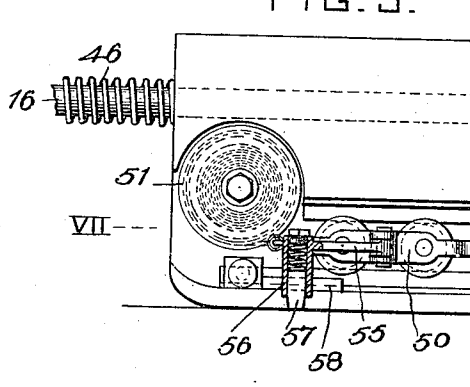


FIG. 6.

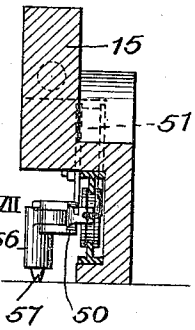
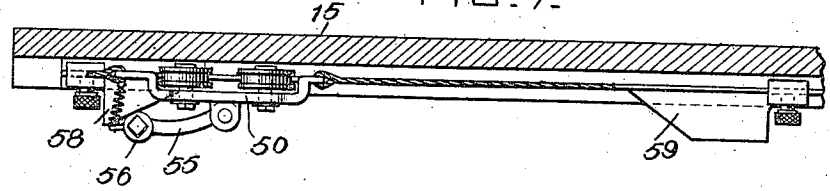


FIG. 7.



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UNITED STATES PATENT OFFICE.

GEORGE JOSEPH GERHARDT, OF STEUBENVILLE, OHIO, ASSIGNOR OF ONE-HALF TO CHARLES HOFFMAN, OF STEUBENVILLE, OHIO.

MECHANISM FOR MARKING SHEETS.

No. 873,226. Specification of Letters Patent. Patented Dec. 10, 1907.

Application filed January 4, 1907. Serial No. 350,701.

To all whom it may concern:

Be it known that I, GEORGE JOSEPH GERHARDT, residing at Steubenville, in the county of Jefferson and State of Ohio, a citizen of the United States, have invented or discovered certain new and useful Improvements in Mechanism for Marking Sheets, of which improvements the following is a specification.

In the manufacture of sheet metal, it is customary to reduce the sheet to the desired gage in lengths greater than those of the commercial sheets to be formed and of a width somewhat greater than the desired width of the finished sheet, and then to divide up this length of sheet metal into squares or oblong sections of the desired length and width. The edges of the long sheet are defective and defects sometimes occur a considerable distance within the edge and sometimes along the middle portion of the sheet, and in dividing up the long lengths into sections these defective portions must be avoided. In the merchantable shape the sheets vary in size both as regards length and width, and in dividing up the long lengths into sections or small sheets it has heretofore been customary to have patterns made of wood of the desired dimensions to place these patterns upon the long lengths and mark around them to give the line of shear. This method is slow and cumbersome and the expense of patterns is considerable.

The object of the present invention is to provide mechanism for marking the sheet, such mechanism being so constructed that either it can be run along over a length of sheet while the latter is resting upon a suitable support, as a cold bed or a hot bed, or other platform, or the sheet can be run under the marking mechanism by the feed table of the rolls.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a top plan view of my improved marking mechanism; Fig. 2 is a side elevation of the same; Fig. 3 is a sectional plan view, the plane of section being indicated by the line III—III Fig. 2, Fig. 4 is an end elevation, Fig. 5 is an enlarged detail view of the marking mechanism, Figs. 6 and 7 are sectional views of the same, the planes of section being indicated respectively by the lines VI—VI and VII—VII Fig. 5.

In the practice of my invention my improved mechanism is mounted upon a suitable frame consisting of longitudinal horizontal bars 1 and 1^a, 2, 2^a and horizontal transverse bars 3, 3^a and 4, 4^a, the longitudinal bars being connected by vertical posts 5 at the corners of the frame and preferably by intermediate posts or braces 6. In some cases the frame will be arranged stationary relative to a suitable bed or support onto which the sheets are run and in other cases the frame will be adapted to move along suitable rails on opposite sides of the sheet supporting bed. In the latter case the corner posts are provided at their lower ends with suitable bearings or boxes for the wheels 7, and provision is made for driving the wheels at the front or rear ends, or both, by means of a suitable motor 8 mounted upon the frame and having its armature shaft 9 intermeshing by suitable gearing, as a worm and wheel, with the shaft 10 having sprocket wheels 11 secured thereon. Drive chains 12 extend around these sprocket wheels and around corresponding wheels 13 on the shafts of the supporting wheels 8. By this means the frame can be quickly and easily shifted back and forth as required along the entire length of a sheet which is to be marked and cut.

In the construction shown the sheet support consists of rolls *a* which may be the rolls of a feed table for sheet or plate mills or other bed or table.

The marking devices are carried upon suitable rails movably supported on transverse bars of the frame so that such rails 15 can be shifted relatively to each other according to the desired width of sheet and also together, so as to be placed at an angle to the length of the sheet to be marked. These rails 15 carry suitable marking devices which when the rails are lowered will traverse along the sheet and mark the same with parallel lines. Provision is also made to impart to these marking devices a movement which would give a distinguishing mark or indication on the sheet, at the beginning of their marking movement and also at the end of such marking movement at the end of the traverse of the markers, the length of traverse being varied according to the length of sheet desired.

While not limiting myself to the exact construction of parts hereinafter described I

have found the following combination well adapted for the purpose. The rails 15 are made of considerable width and of a length greater than the length of the longest section to be marked. At their ends these rails are provided with supporting rods 16 which engage movable carriages mounted upon the transverse bars 3, 3ª. It will be observed by reference to Fig. 3 that these carriages are provided with rollers 17 mounted upon the bars 3, 3ª and have swiveled extensions 18 preferably provided with friction rollers 19 to support the rod extensions 16 of the rails 15. This construction will allow a free and easy longitudinal movement of the rails 15 as hereinafter described. In order to adjust the rails 15 relative to each other they are connected by adjustable links 20 and 20ª to nuts 21 and 21ª, and 22, 22ª, two of the nuts having right-handed internal threads and the other two left-handed internal threads engaging upon corresponding threaded portions of the shaft 23, so that by the rotation of the shaft the nuts 21, 21ª will be moved in one direction while the nuts 22 and 22ª will be moved in the opposite direction, and by their movement will shift the rails 15 in or out an equal distance. By this construction the rails are maintained in parallelism with each other and are prevented from longitudinal movement relative to each other. In order to rotate this shaft 23, it is preferred to employ a suitable electric motor although other mechanism or means may be employed for that purpose. In the construction shown, this motor is secured upon a suitable bed extending over the rails 15 which are movable under the bed. The bed is also preferably provided with a bearing 25 for the shaft 23. The armature shaft of the motor is connected by a suitable gearing such as the worm and gear shown, with the shaft 23 so as to rotate the same in either direction as required. The employment of rails of a considerable weight is desirable as they will hold the sheet flat upon its support, pressing out all the bends or wrinkles which may have been formed in the rolling of the sheet.

In order either to shift the marking mechanism relative to the sheet or the latter relative to the marking mechanism provision is made for lifting the rails out of contact with the sheet after one marking operation, and to this end the rails 3, 3ª are secured to sleeves 27, movable up and down on the posts 5. In order to raise these bars 3, 3ª and with them the rails 15, the bars are connected to an elevated portion of the frame by means of toggle links 28, and the pivot pins connecting these links are connected to ropes 29 passing around guide pulleys 30 and connected to a winding drum 31. The ropes from opposite ends of the mechanism are oppositely connected to the drum, so that when the drum is rotated the bars 3, 3ª at both ends will be simultaneously raised or lowered. The drum is so located that it may be rotated from the cage 41 and is rotated by any suitable means, as by a worm 32 engaging a gear 33 secured to the drum.

As heretofore stated it is necessary in dividing the long length of sheet into sections to avoid defects in the sheet and the lines of shear must be on lines at an angle to the length of the sheet to avoid excessive waste. Hence provision is made for shifting the rails 15 to an angular position relatively to the length of the sheet. This is accomplished as heretofore stated by mounting the supporting bars 16 of the rails upon carriages on bars 3, 3ª and in order to shift these carriages and rails the shaft 23 or other suitable part is connected by ropes 36 passing around guide-pulleys 37 and 38 to drums 39 and 40, mounted in a suitable bearing on the cage 41 carried by the frame work. These drums are adapted to be shifted by any suitable means such for example as the pivoted toothed segments 42 intermeshing with pinions 43 on the sides of the drum. By moving these segments, one or both, the angular position of the rails 15 relative to the sheet can be changed as required. In order to yieldingly hold the rails in proper position in the frame, cushioning springs 46 are arranged on the rod extensions 16 between the ends of the rails 15 and the carriages carrying the same as shown in Fig. 3.

In order to mark the sheets, carriages 50 are movably mounted upon the rails 15 as shown in Fig. 2, such carriages being adapted to be shifted in one direction by suitable power mechanism and in the opposite direction by spring drums 51, to which the carriages are connected by a suitable rope. Any suitable power mechanism may be employed to shift the carriages in the opposite direction, as for example the toothed segment 52 operating through suitable interposed gearing, a winding drum 53 mounted on one of the rails. The shaft 54 of the drum extends across to the other rail and has a drum 53ª secured thereon so that it will rotate with the shaft but can move along the same as the rails are shifted. By this construction the carriages 50 on both rails can be simultaneously shifted. To these carriages are connected spring arms 55 provided at their outer ends with suitable heads or sockets 56 in which are placed the marking pencils 57, adapted to be gradually forced out as used by means of springs within the sockets. The spring arms are constructed to be normally held in such position that the pencils will traverse along the lower edges of the rails acting as straight edges. Provision is made at the starting point of the pencils to move the latter outward to give an indicating or starting mark. This is done by means of cam plates 58 secured to the rails in such

position that the spring arms will move along the same as they reach the starting point and thereby mark an angular line on the sheet. Similar cam plates 59 are adjustably mounted on the rails, so as to impart a similar movement to the pencils when they have traversed the sheet a distance equal to the desired length of the section. The angular marks will indicate the line on which the sheet is to be cut transversely.

I claim herein as my invention:

1. In a sheet marking mechanism the combination of means for supporting pencils or other marking devices, means for shifting such marking devices towards and from each other, means for shifting the marking devices longitudinal of the sheet, and means for imparting an angular movement to the marking devices at suitable points in their traverse and while in contact with the surface to be marked.

2. In a machine for marking sheets, the combination of two rails or edges, means for adjusting such rails or edges towards and from each other, marking devices movable along and guided by the rails or edges and means for shifting such marking devices.

3. In a machine for marking sheets, the combination of rails or edges, adapted to be shifted simultaneously to an angular position relative to the sheet to be marked, means for adjusting the rails towards and from each other, marking devices movable along and guided by the rails or edges and means for shifting the marking devices.

4. In a machine for marking sheets the combination of rails or edges, means for raising and lowering the rails or edges, means for adjusting the rails or edges towards and from each other, marking devices movable along and guided by the rails or edges and means for shifting such marking devices.

5. In a machine for marking sheets the combination of rails or edges having their ends adjustably supported, means for shifting the rails or edges towards and from each other, means for shifting the rails to an angular position relative to the sheet to be marked, marking devices movable along and guided by the rails or edges and means for shifting the marking devices.

6. In a sheet marking mechanism, the combination of rails or edges, means for moving the rails or edges towards and away from the sheet to be marked, marking devices mounted on the rails or edges, and means for simultaneously shifting such marking devices longitudinally of the rails or edges and in contact therewith.

7. In a machine for marking sheets the combination of rails or edges, marking devices movably mounted on the rails or edges, means for shifting the marking devices longitudinally of the rails or edges, and means for imparting an angular movement to the marking devices.

8. In a sheet marking mechanism, the combination of a sheet support, marking devices, means for shifting the marking devices longitudinally of the sheet support, and means for adjusting the marking devices so that their lines of movement will be at an angle to the median of the sheet support.

9. In a sheet marking mechanism, the combination of rolls for the support for the sheet, guiding rails or edges, means for moving the rails or edges towards and away from the sheet being marked, means for supporting pencil or other marking devices movable along the rails or edges, means for adjusting the rails or edges toward and from each other, and means for moving the marking devices along the rails or edges and in contact therewith.

In testimony whereof, I have hereunto set my hand.

GEORGE JOSEPH GERHARDT.

Witnesses:

CHARLES BARNETT,

J. HERBERT BRADLEY.