

H. M. BARKSDALE.
LINING BOXES TO CONTAIN EXPLOSIVES.
APPLICATION FILED DEC. 13, 1909.

977,698.

Patented Dec. 6, 1910.

2 SHEETS—SHEET 1.

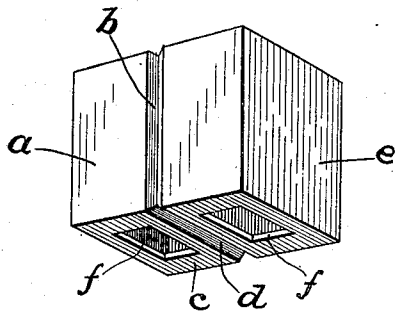


FIG. 1.

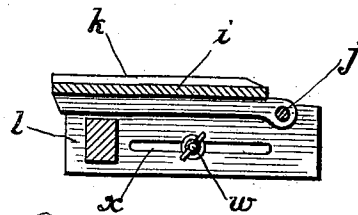


FIG. 3.

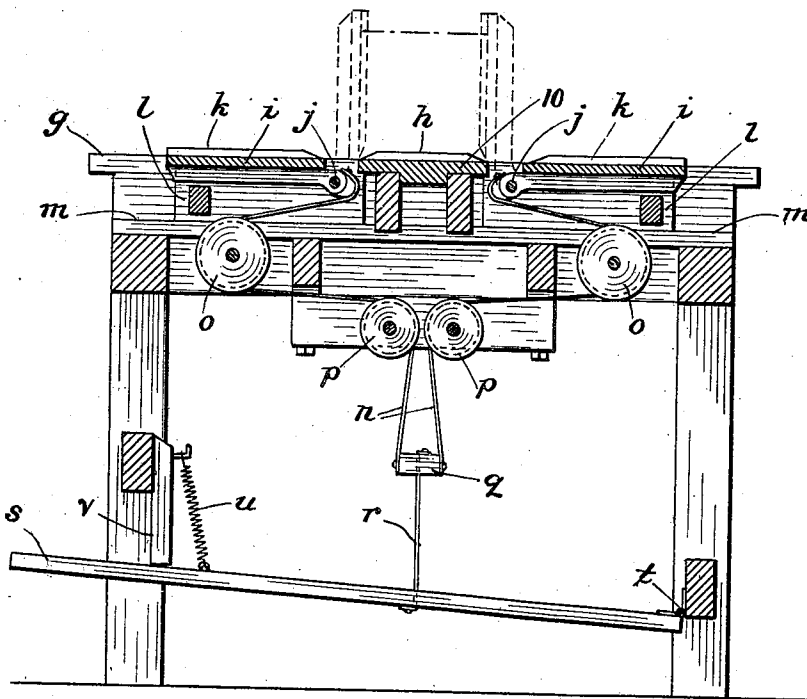


FIG. 2

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H. M. BARKSDALE.
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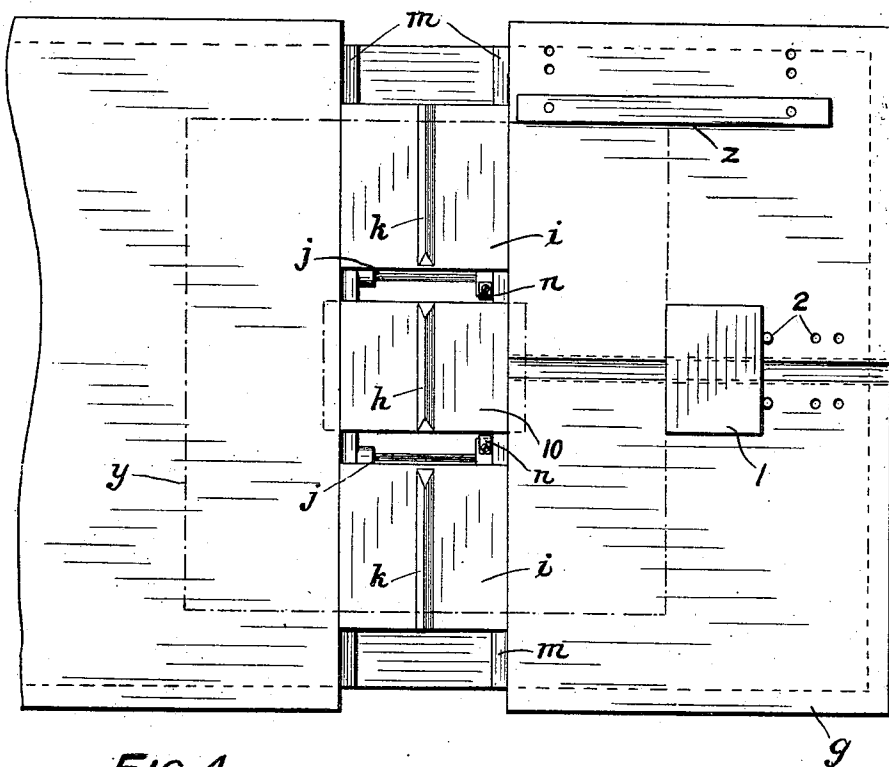


FIG. 4.

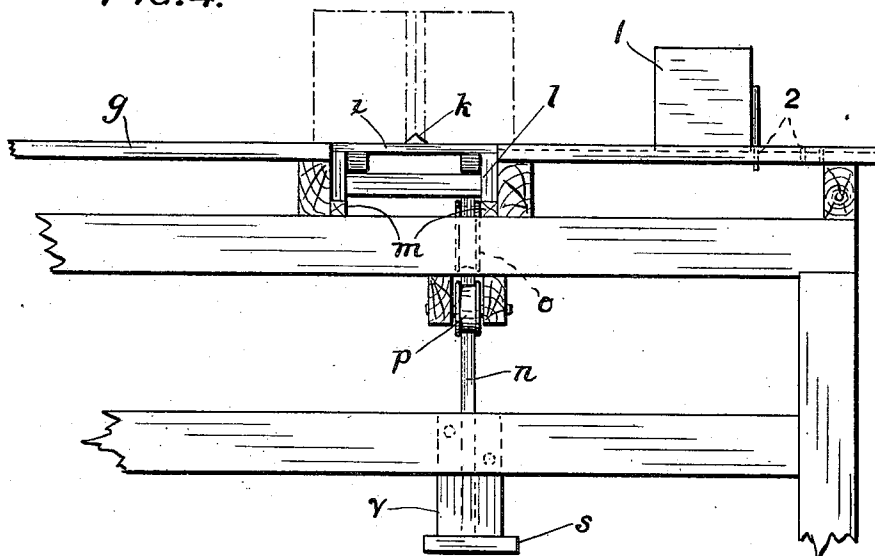


FIG. 5.

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UNITED STATES PATENT OFFICE.

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LINING BOXES TO CONTAIN EXPLOSIVES.

977,698.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed December 13, 1909. Serial No. 532,747.

To all whom it may concern:

Be it known that I, HAMILTON M. BARKSDALE, a citizen of the United States, residing at Wilmington, county of Newcastle, and State of Delaware, have invented a new and useful Improvement in Lining Boxes to Contain Explosives, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

In packing explosives or cartridges containing explosives, a component part of which explosive is nitroglycerin, in boxes it is necessary to line the box with material which will prevent the nitroglycerin being absorbed by the box. Paraffin paper or the like is generally used. The general method of lining such boxes with paper is to use a former, the exterior of which is substantially the size and contour of the inside of the box. The paper is enveloped upon this former, the paper being bent over at the ends of the former to form a closure. The difficulty with this construction is that it is impossible to make the former exactly the size of the inner contour of the box because it would then be impossible to enter the interior of the box, therefore, when the former is entered into the interior of the box and removed therefrom, leaving the paper, the contour of the paper is slightly smaller than the interior of the box. This produces a tendency of the paper breaking when the box is packed, resulting in the absorption of the nitroglycerin in the wood of the box.

The main purpose of my invention is to construct a former which, while it can readily be entered in the interior of the box, will carry with it sufficient paper so that when the former is removed the paper may expand sufficiently without breaking, to completely conform to the contour of the box. This and certain mechanism to be hereinafter described, form the subject-matter of my invention.

Generally speaking, in carrying out my invention I take a sheet of paraffin or other like paper of appropriate size which is laid upon a table in such position that a bead or projection upon the table will strike the paper central of its length. I then apply to this paper my novel former, which differs from the previous former in that instead of having plain faces it has on its bottom a

groove corresponding to the projection on the table, and on its sides similar vertical grooves. The paper is then bent up around this former. The groove in the bottom of the former is forced on the projection on the table so that the projection enters such groove. By appropriate mechanism, an example of which will be hereinafter described, corresponding projections are forced into the vertical grooves in the sides. The paper is bent over in the ordinary manner on the ends of the former. The former with its surrounding paper is inserted into the interior of the box and the former withdrawn. The portions of the paper in the grooves allow the sheet to expand to conform to the sides and bottom of the box, while the loose folds on the ends allow that portion to expand to correspond to the ends of the box without any strain upon the paper.

I will now describe the former and mechanism for carrying out this invention.

In the drawings: Figure 1 is a perspective view of the former. Fig. 2 is a cross sectional view of the machine with which the former is used. Fig. 3 is a detail of a portion of same shown in section. Fig. 4 is a plan view of the top of the machine. Fig. 5 is a portion of the front view of same.

I will first describe the former which is shown in Fig. 1. *a* represents the side of the former; *b* the groove in the side; *c* the bottom of the former; *d* the groove in the bottom of the former; *e* the ends of the former. This former is hollow and is provided with the openings *f* in the bottom to allow its withdrawal when inserted, without any tendency of its also withdrawing the paper by suction.

g is the table.

h is a projection upon the table. This projection *h* corresponds with the groove *d*. Of course it is to be borne in mind that there is now being described a certain sized former, and if the size of that former be varied a corresponding change will be made in the projection *h* or the portion of the paper which carries it. For this purpose the projection *h* is carried upon a plate 10 which is detachably secured to the table.

i, i, are side plates pivoted at *j*. These plates *i* have projections *k* corresponding to the grooves *b* in the former. These projec-

tions are of sufficient length to be used with all sizes of boxes. The pivot *j* is carried by the carrier *l* which is mounted on ways *m*, so that by moving this carrier, the distance between the plates *i* and *i* may be varied to accommodate different widths of boxes. To each of the plates *i* and *i* is connected one end of a strap *n* which passes around pulleys *o* and *p*. The ends of the straps *n* are connected to opposite ends of the equalizing block *q*, which is connected by strap *r* to the foot lever *s*. This foot lever *s* is pivoted at *t* to the frame of the machine.

u is a spring connecting the lever *s* to a fixed point of the machine.

v is a stop limiting the upward movement of the lever *s*.

The carrier *l* is locked in its desired position by means of the set screw *w*, which passes through the slot *x* in the carrier *l*. When these set screws are loosened the carriers, and with them the plates *i*, may be adjusted to the desired position, and when in that position, and the set screws clamped, they are held fixed.

In starting the operation, the plates *i*, *i*, are in their lower position, shown in Fig. 2, and the paper *y*, shown in broken lines in Fig. 4, is laid upon the table against the adjustable guiding surfaces *z* and 1. The guide 1 is movable toward the projection *h* and is held from the reverse movement by the pins placed in the orifice 2. These guides are, as before stated, adjustable upon the table so that the paper, when placed against these guides, is adjusted so that the projection *h* is central of the length of the paper. The former is then inserted in the spaces so that the groove *d* will mate with the projection *h*. The lever *s* is then operated to bring the plates against the side of the former, as shown in broken lines, Fig. 2, and the projections *h* and *h* force the paper into the grooves *b*, *d* and *b*.

As in the ordinary construction, the paper is folded against the ends of the former. The guide 1 may be used to hold the paper when so folded at one end while it is being similarly folded at the other end. The former is then inserted within the box and when withdrawn will leave in the box paper in excess of that of the prior construction, represented by the amount in the grooves *b* and *d*. As these grooves *b* and *d* may be properly regulated to provide sufficient paper when expanded the interior of the box may be filled, and thus the troubles occurring in the previous arrangement avoided.

I do not herein claim the paper form produced as the same forms the subject matter of an application filed by me February 2, 1910, Serial No. 541,569, which application is a division of the above entitled application.

Having now fully described my invention,

what I claim and desire to protect by Letters Patent is:—

1. In combination with a former, the outer contour of which is slightly less than the interior of the box and provided with vertical grooves in its sides and a groove in its bottom parallel to the ends of the former, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves.

2. In combination with a former, the outer contour of which is slightly less than the interior of the box and provided with vertical grooves in its sides and a groove in its bottom parallel to the ends of the former, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves, said plates being movable toward and from said table projection.

3. In combination with a former, the outer contour of which is slightly less than the interior of the box and provided with vertical grooves in its sides and a groove in its bottom parallel to the ends of the former, of a table having a projection adapted to mate with the groove in the bottom of the former, plates on opposite sides of said projection, carriers to which said plates are pivoted, said carriers being mounted on the table to move toward and from said table projection, said plates having projections corresponding to the vertical grooves in said former.

4. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in its sides and a groove in its bottom parallel to the ends of the former, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves.

5. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in its sides and a groove in its bottom parallel to the ends of the former, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corre-

sponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves, said plates being movable toward and from said table projection.

6. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in its sides and a groove in its bottom parallel to the ends of the former, of a table having a projection adapted to mate with the groove in the bottom of the former, plates on opposite sides of said projection, carriers to which said plates are pivoted, said carriers being mounted on the table to move toward and from said table projection, said plates having projections corresponding to the vertical grooves in said former.

7. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in two parallel sides and a groove in its bottom parallel to the other two sides or ends, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves.

8. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in two parallel sides and a groove in its bottom parallel to the other two sides or ends, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves, said plates being movable toward and from said table projection.

9. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in two parallel sides and a groove in its bottom parallel to the other two sides or ends, of a table having a projection adapted to mate with the groove in the bottom of the former, plates on opposite sides of said projection, carriers to which said plates are pivoted, said carriers being mounted on the table to move toward and from said table projection, said plates having projections corresponding to the vertical grooves in said former.

10. In combination with a former, the outer contour of which is slightly less than the interior of the box and provided with vertical grooves in its sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted

to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves.

11. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in its sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves.

12. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in two parallel sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves.

13. In combination with a former, the outer contour of which is slightly less than the interior of the box and provided with vertical grooves in its sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves, said plates being movable toward and from said table projection.

14. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in its sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves, said plates being movable toward and from said table projection.

15. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in two parallel sides and a groove in its bottom extending between

said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves, said plates being movable toward and from said table projection.

16. In combination with a former, the outer contour of which is slightly less than the interior of the box and provided with vertical grooves in its sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates on opposite sides of said projection, carriers to which said plates are pivoted, said carriers being mounted on the table to move toward and from said table projection, said plates having projections corresponding to the vertical grooves in said former.

17. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in its sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates on opposite sides of said projection, carriers to which said plates are pivoted, said carriers being mounted on the table to move toward and from said table projection, said plates having projections corresponding to the vertical grooves in said former.

18. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in two parallel sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates on opposite sides of said projection, carriers to which said plates are pivoted, said carriers being mounted on the table to move toward and from said table projection, said plates having projections corresponding to the vertical grooves in said former.

19. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in its sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally con-

nected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves.

20. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in two parallel sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves.

21. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in its sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves, said plates being movable toward and from said table projection.

22. In combination with a former adapted to enter the box to be lined, said former having vertical grooves in two parallel sides and a groove in its bottom extending between said grooved sides, of a table having a projection adapted to mate with the groove in the bottom of the former, plates pivotally connected with said table on opposite sides of said projection, said plates having projections corresponding to the vertical grooves in said former, and means to move said plates on their pivots to cause the projections to enter the grooves, said plates being movable toward and from said table projection.

In testimony of which invention, I have hereunto set my hand, at Wilmington, Del., on this 8th day of Dec., 1909.

HAMILTON M. BARKSDALE.

Witnesses:

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B. F. HOUSTON.