

Aug. 17, 1937.

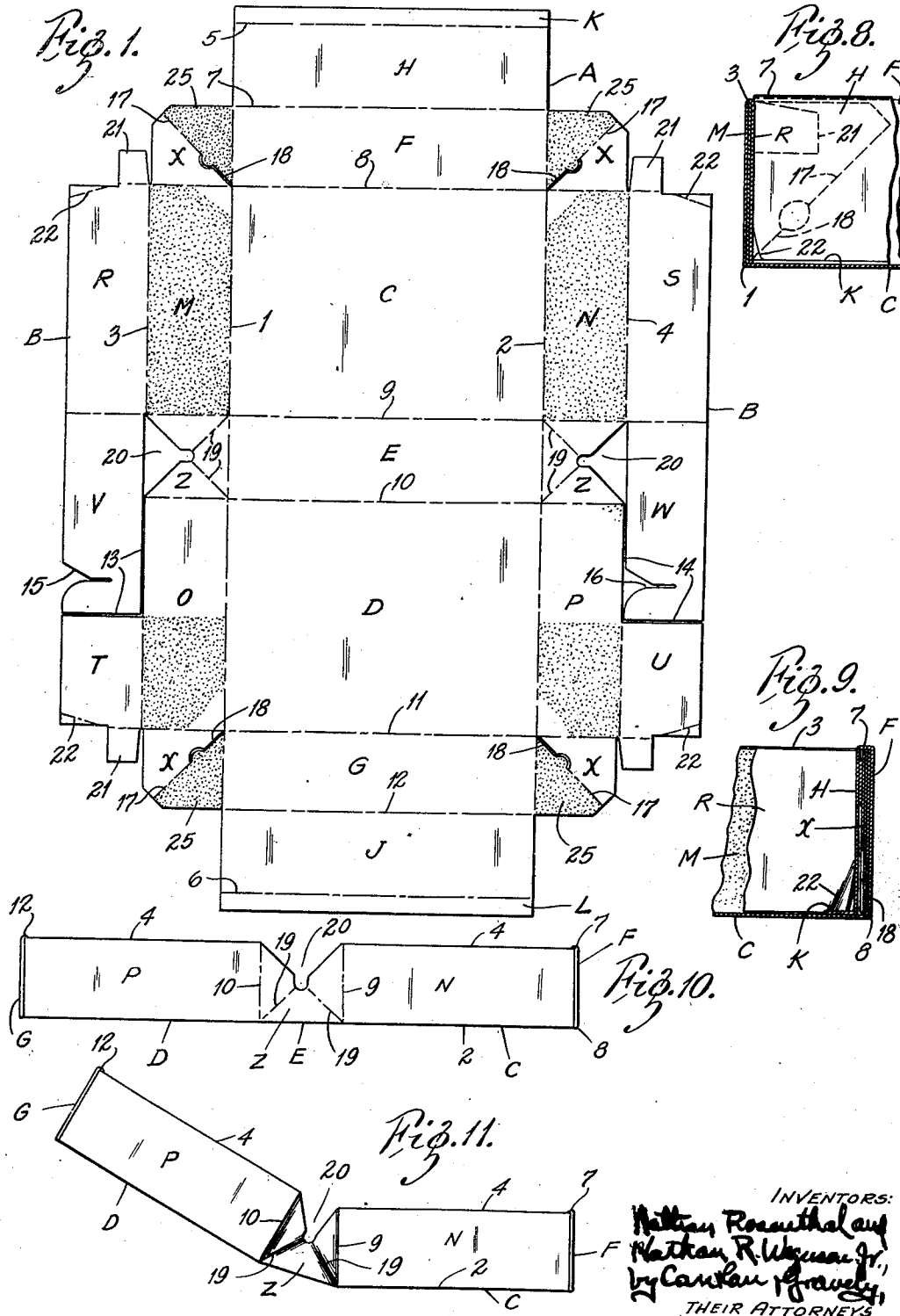
N. ROSENTHAL ET AL

2,090,375

FOLDING BOX

Filed Jan. 15, 1937

3 Sheets-Sheet 1



INVENTORS:
Nathan Rosenthal and
Nathan R. W. W. W. W.
by Carlton Graves,
THEIR ATTORNEYS

Aug. 17, 1937.

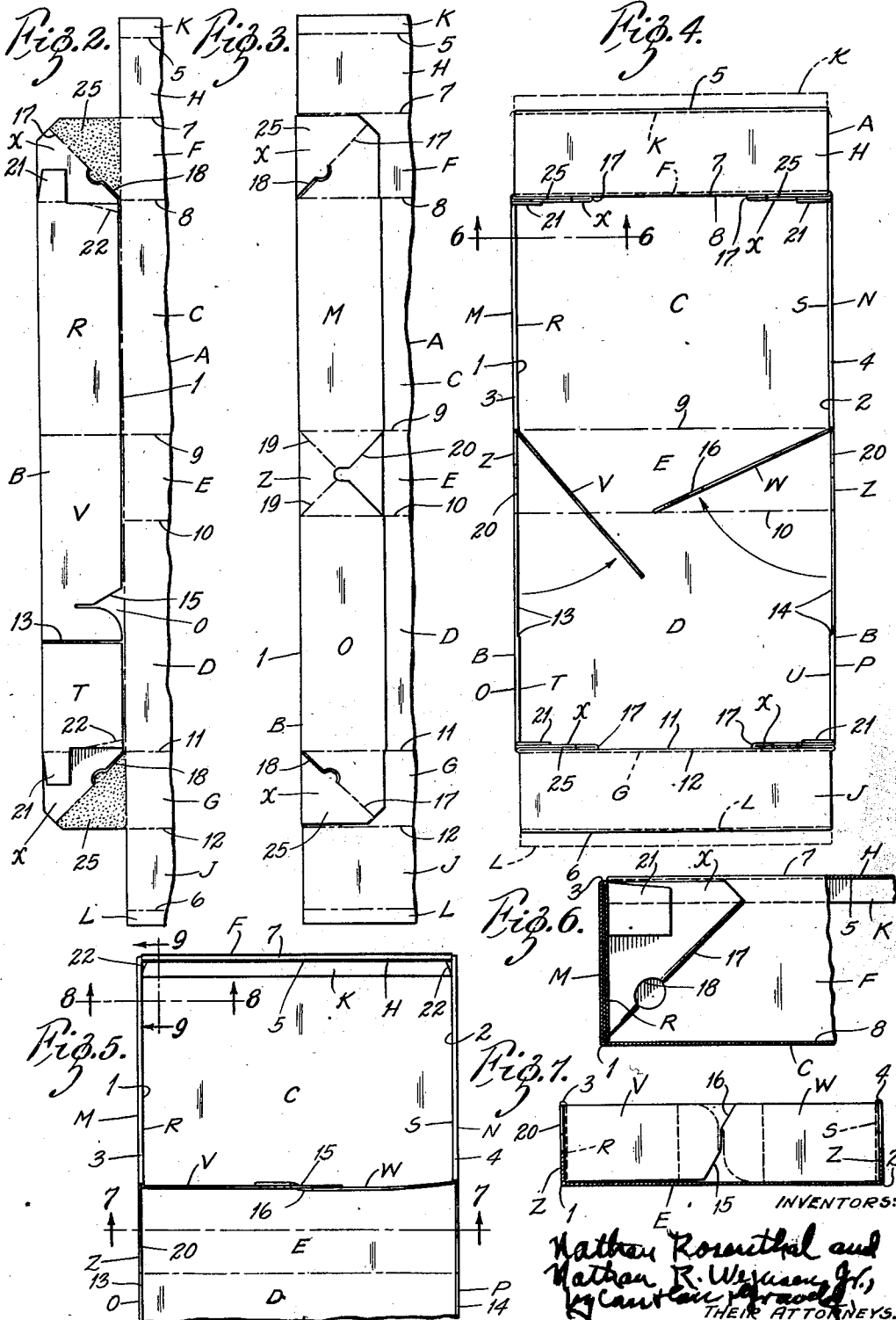
N. ROSENTHAL ET AL

2,090,375

FOLDING BOX

Filed Jan. 15, 1937

3 Sheets-Sheet 2



Aug. 17, 1937.

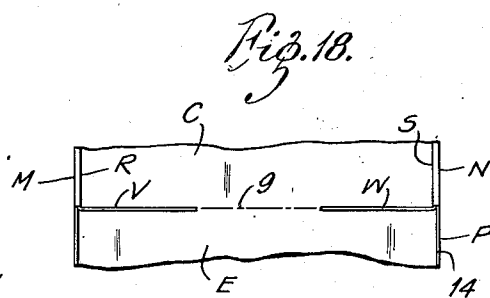
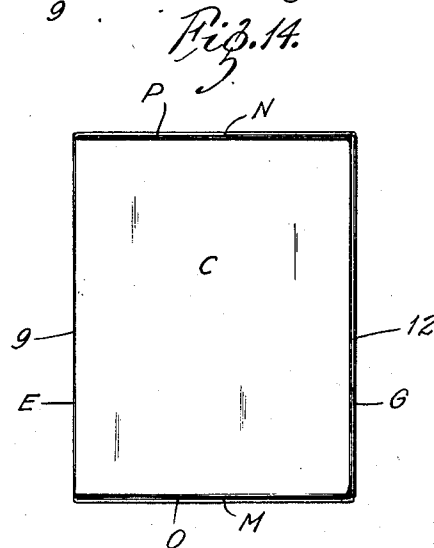
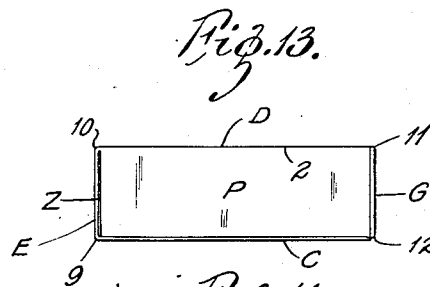
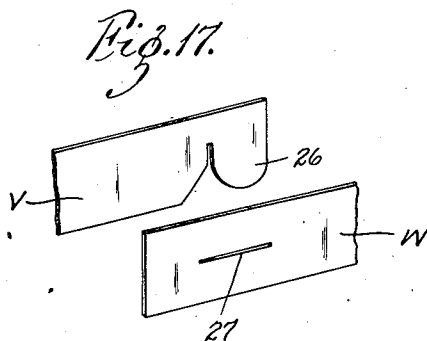
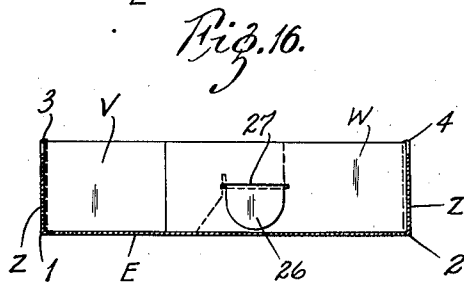
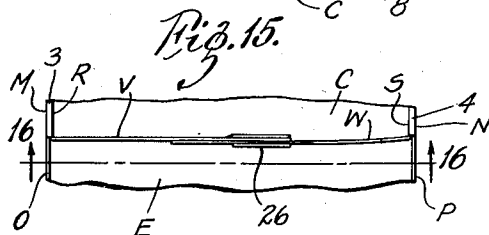
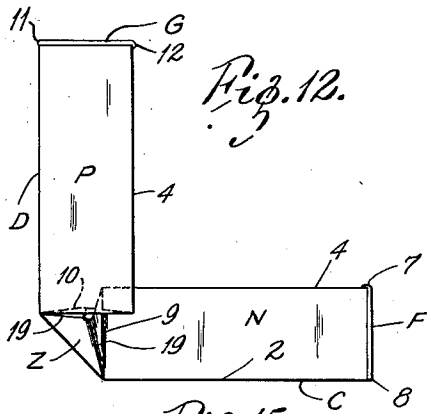
N. ROSENTHAL ET AL

2,090,375

FOLDING BOX

Filed Jan. 15, 1937

3 Sheets-Sheet 3



Nathan Rosenthal and
Nathan R. Weyman, Jr.
by Carl Hanfgrävy,
THEIR ATTORNEYS.

UNITED STATES PATENT OFFICE

2,090,375

FOLDING BOX

Nathan Rosenthal, La Due, and Nathan Robert Wegusen, Jr., St. Louis, Mo., assignors to Rosenthal Paper Company, St. Louis, Mo., a corporation of Missouri

Application January 15, 1937, Serial No. 120,648

7 Claims. (Cl. 229—31)

This invention relates to folding boxes and has for its principal object to make a folding box with the body and top in one piece or permanently attached. Another object is to make such a box with its side and end walls doubled or reinforced. Another object is to provide for the application of all adhesives in a single operation. The invention consists in the box hereinafter described and claimed.

In the accompanying drawings,

Fig. 1 illustrates the blank out of which our box is made.

Fig. 2 illustrates a marginal portion of the blank after the first folding operation,

Fig. 3 illustrates a marginal portion of the blank after the second folding operation,

Fig. 4 represents the stage in the setting-up operation at which the side walls and outer end walls have been raised and prior to the interlocking of the tongues which reinforce the hinge end of the box.

Fig. 5 is a plan view of the body portion of the box before swinging the top into position,

Fig. 6 is a detail sectional view through the side wall on the line 6—6 of Fig. 4,

Fig. 7 is a cross-section on the line 7—7 of Fig. 5,

Figs. 8 and 9 are sectional detail views through the side and end walls on the lines 8—8 and 9—9, respectively of Fig. 5,

Fig. 10 is a side view of the box with the top fully opened,

Fig. 11 is a side view with the top partly opened,

Fig. 12 is a view similar to Fig. 11 with the top swung into vertical position,

Fig. 13 is an end view, and Fig. 14 is a bottom view of the box set up and closed,

Figs. 15, 16, and 17 are detail views of a modification of a locking tongue; and

Fig. 18 is a detail view of a modification wherein the tongues at the hinge end of the box are too short to interlock but do reinforce such hinge end.

The blank illustrated in Fig. 1 comprises a relatively long middle portion A and two side portions B which terminate short of each end of the middle portion. This blank has four longitudinal scores disposed in two pairs or groups of two, namely, 1 and 3, and 2 and 4, and eight transverse scores 5, 6, 7, 8, 9, 10, 11, 12 which divide the blank into a number of rectangles. Two of the longitudinal scores 1, 2 separate the middle portion of the blank from the respective side portions. The other two

longitudinal scores 3, 4 are near the middle of said side portions but slightly closer to the free side edges than to the middle portion of the blank. Two of the transverse scores 5, 6 are located close to the respective ends of the middle portion of the blank. The other six transverse scores are divided into three groups 7 and 8, 9 and 10, and 11 and 12, the scores of each group being spaced apart the same distance as the two adjacent longitudinal scores 1, 3 are spaced apart and slightly more than the distance between either endmost transverse score 5 or 6 and the transverse score 7 or 12 closest thereto.

The rectangle or panel C between the middle pair of transverse scores 9, 10 and one of the other pairs of transverse scores 7, 8 constitutes the bottom of the box, and the rectangle or panel D between said middle pair of scores 9, 10 and the third pair of transverse scores 11, 12 constitutes the body portion of the top of the box. The rectangle or panel E between the middle pair of scores 9, 10 constitutes a side, (hereinafter called hingehead) of the box along which the body and top of the box are hinged together. The rectangles or panels F and G between the transverse scores of the other pairs 7 and 8, and 11 and 12, constitute the outer walls of sides (hereinafter called free ends) of the body and of the top of the box, respectively. The next adjacent rectangles or panels H and J contiguous with said outer walls of said free ends constitute the inner walls of the ends. The narrow rectangles K and L at the ends of the middle portion of the blank constitute flaps that are attached to said inner end walls and, in set-up position of the box, rest on the bottom (or top) of the box with their ends under the inner wall members of the adjacent sides of the body or top of the box. The outer side walls of the body and top are formed by the panels M, N, O, and P opposite the respective bottom and top panels C and D; and the inner side walls are formed by the outer panels R, S, T, and U of the side portions of the blank, and these panels have reinforcing tongues or extensions 21 at their ends close to their longitudinal score lines. Preferably there are oblique scores 22 across the free corners of said inner side wall panels and these corners are bent out and kept free from adhesive.

One score 9 of the middle transverse pair extends from side edge to side edge of the blank but the other transverse score 10 of said pair terminates at the outer longitudinal score lines 3, 4. As shown at 13 and 14, the blank is slit along these outer score lines from the point of intersec-

tion of the full width transverse score 9 to points beyond the adjacent short length transverse scores 10 and thence transversely to the adjacent side edge of the blank, thereby forming tongues V and W that are hinged along said full-length score line 9 to the inner walls of the sides. The length of these tongues is more than half the width of the hinge end of the box and each tongue is notched, as at 15, 16 for cooperation with the other, the notch in one tongue being in its outer edge and the notch of the other tongue being in its inner edge.

The small rectangles X formed at the outer corners of the bottom of the box opposite the ends of the adjacent outer walls thereof are coped off at their outermost corners and are scored diagonally, as at 17, from such outermost corners to their innermost corners. The blank is preferably slit entirely through, as at 18, along these diagonal score lines for some distance outwardly from such innermost corners in order to facilitate folding on such diagonal scores. The small rectangles at the outer corners of the body portion of the top are scored and slit similarly to that just described.

The small rectangles Z opposite the ends of the middle pair of scores 9, 10 have scores 19 extending diagonally from each of their inner corners.

Preferably the outermost of the four triangular portions, into which each of such rectangles is divided by such crossed scores, is entirely cut out.

While the blank is still flat, suitable adhesive is applied to the panels M, N which form the outer walls of the sides of the box, and also to so much of the panels O, P, being the panels which form the outer side walls of the top, as lie beyond the tongue-forming slits 13. Adhesive (indicated in the drawings by stippling) is also applied to the triangular areas or leaves 25 at the ends of the panels F, G which form the outer end walls of the body of the box and of its top respectively. The outer portions of the sides of the blank are then folded along the outer longitudinal scores 3, 4 and the portions thereof which come in contact with the adhesive on the outer side walls are firmly secured to the outer side walls and themselves constitute the inner side walls R, S, T, U. The side portions of the blank are then folded along the inner longitudinal scores, 1, 2, and the triangular leaves 25, to which adhesive had been applied, are thereby firmly secured to the outer end walls F and G of the top and bottom respectively.

The operation of setting up the box is as follows: The ends of the blank are raised, and, by reason of the bellows folds which attach the ends to the sides, lifting of the ends raises the sides also. The inner end walls are then swung down, carrying their flaps with them, until the inner end walls bear flatwise against the outer end walls with their own ends between the ends of the inner side walls and the ends of the outer end walls of the body (or top, as the case may be), and with the ends of the flaps extended beneath the lower edges of said inner side walls. In this operation, the outer ends of both the body and the top are set up while the bottom and top panels and their common connecting end remain in the same plane. In this operation, the locking tongues and triangular portions opposite said common end wall move up with said side walls. The next operation is to swing in and interlock the respective locking tongues and then swing up the top together with the common end wall.

In this last-mentioned movement, the diagonal scores 19 at the ends of the common end wall permit said end wall to be swung upwardly along the score 9, which forms its lower edge and permit the top to be swung along the score 10, which forms the top edge of said end wall until the sides and other end of the top slip past and enclose the corresponding portions of the body of the box.

In the construction illustrated in Figs. 15, 16 and 17, one of the interlocking tongues has a hooked portion 26 and the other tongue has a slit 27 in position for such hook to enter. When thus engaged, the two tongues together serve not only as a tie to hold the sides of the box together but they also serve after the manner of an inner wall to relieve or reinforce the hinge end of the box. In the open position of the box, the tongues alone temporarily constitute one end wall thereof. In the modification illustrated in Fig. 18, the tongues are too short to overlap and interlock. Nevertheless, they reinforce the hinge end of the box and enable the side walls of the box to be doubled for a greater length than is the case when the tongues overlap.

What we claim is:

1. A blank for a folding box whose cover is integral with its body, said blank being of oblong shape and having two parallel scores along each of its long sides, and a transverse score near the middle of its length extending the full width of the blank and a second transverse score terminating at the outer of the two longitudinal scores, said blank having slits extending along the outer longitudinal scores from the longer transverse score past the shorter transverse score and thence transversely to the edge of the blank, and scores extending crosswise diagonally outwardly from the points of intersection of said transverse scores with the inner longitudinal scores.

2. A blank for a folding box whose cover is integral with its body, said blank being of oblong shape and having two parallel scores along each of its long sides, and a transverse score near the middle of its length extending the full width of the blank and a second transverse score terminating at the outer of the two longitudinal scores, and scores extending crosswise diagonally from the points of intersection of said transverse scores with the inner longitudinal scores, the triangular areas defined by said diagonal scores and the outer longitudinal scores being cut away and said blank having L-shaped slits extending outwardly from said areas along the outer longitudinal scores and thence transversely to the edge of the blank.

3. A blank for a folding box whose cover is integral with its body, said blank being of oblong shape and having two parallel scores along each of its long sides, two transverse scores near each end, and near the middle of its length a transverse score extending the full width of the blank and a second transverse score terminating at the outer of the two longitudinal scores, said blank having slits extending along the outer longitudinal scores from the longer transverse score past the shorter transverse score and thence to the edge of the blank, scores extending diagonally outwardly from the points of intersection of the inner end transverse and longitudinal scores and scores extending crosswise diagonally from the points of intersection of said transverse scores with the inner longitudinal scores.

4. A folding box comprising a body portion and a cover portion integrally connected together along the upper edge of one outer end wall

of the body portion, the side walls of the body portion being of double thickness and the inner plies thereof having extensions which lie next to said outer end wall and are connected together
5 whereby they constitute an inner end whose position is not affected by the opening or closing of the box.

10 5. A folding box comprising a body portion and a cover portion integrally connected together along the upper edge of one end wall of the body portion, the side and free end walls of the body portion being of double thickness and the inner plies thereof having extensions which
15 lie next to but free of said end wall and are engaged together, the free end of said cover portion and the portions of its side walls adjacent to said free end being of double thickness.

20 6. A folding box comprising a body portion and a cover portion integrally connected together along the upper edge of one end wall of the body portion, the side and free end walls of

the body portion being of double thickness and the inner plies thereof having extensions which lie next to but free of said end wall, the outer side walls of the body and cover portions being connected by portions which have diagonal creases
5 that intersect near the middle, said connecting portions being cut away above such intersections.

7. A folding box comprising a body portion and a cover portion integrally connected together along the upper edge of one outer end
10 wall of the body portion, the side walls of the body portion being of double thickness and the inner plies thereof having extensions which lie next to said outer end wall and are connected together, the outer side walls of the body and cover
15 portions being connected by portions which have diagonal creases that intersect near the middle, said connecting portions being cut away above such intersections.

NATHAN ROSENTHAL.

NATHAN ROBERT WEGUSEN, JR.

20