Dec. 1, 1964 J. C. KALUZNY ETAL 3,159,011

APPARATUS FOR MANUFACTURE OF FLYING TARGETS

Filed July 6, 1962 3 Sheets-Sheet 1

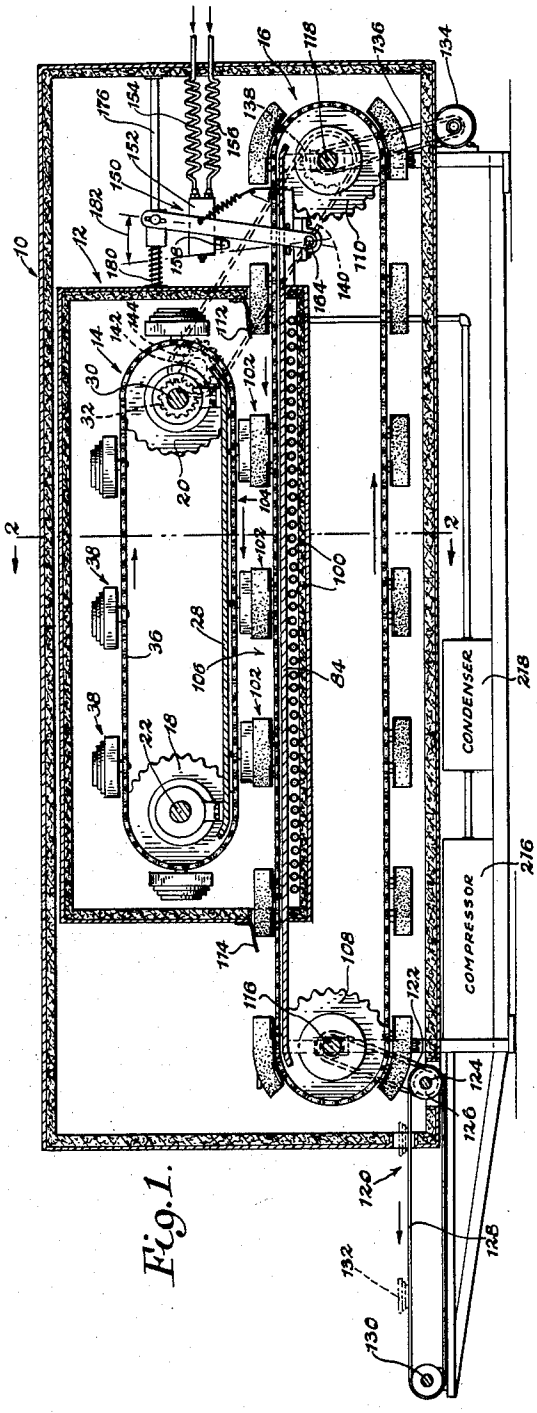


Fig. 1.

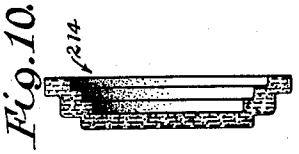


Fig. 10.

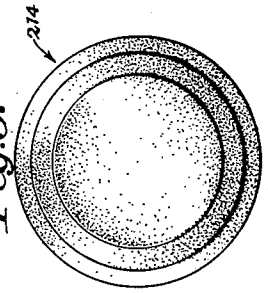


Fig. 9.

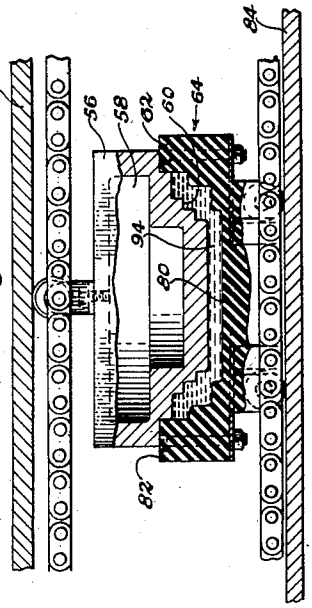


Fig. 8.

INVENTORS
JOHN C. KALUZNY
DAVID MEYER
RICHARD E. McPHERSON

BY

Beau, Brooks, Buckley & Beau
ATTORNEYS

Dec. 1, 1964 J. C. KALUZNY ETAL 3,159,011

APPARATUS FOR MANUFACTURE OF FLYING TARGETS

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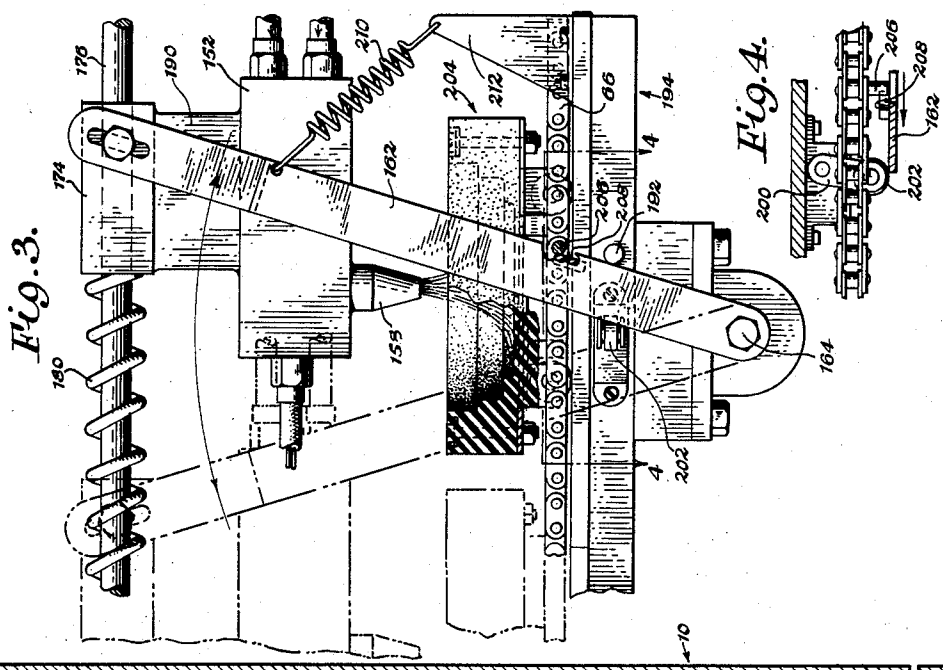


Fig. 3.

Fig. 4.

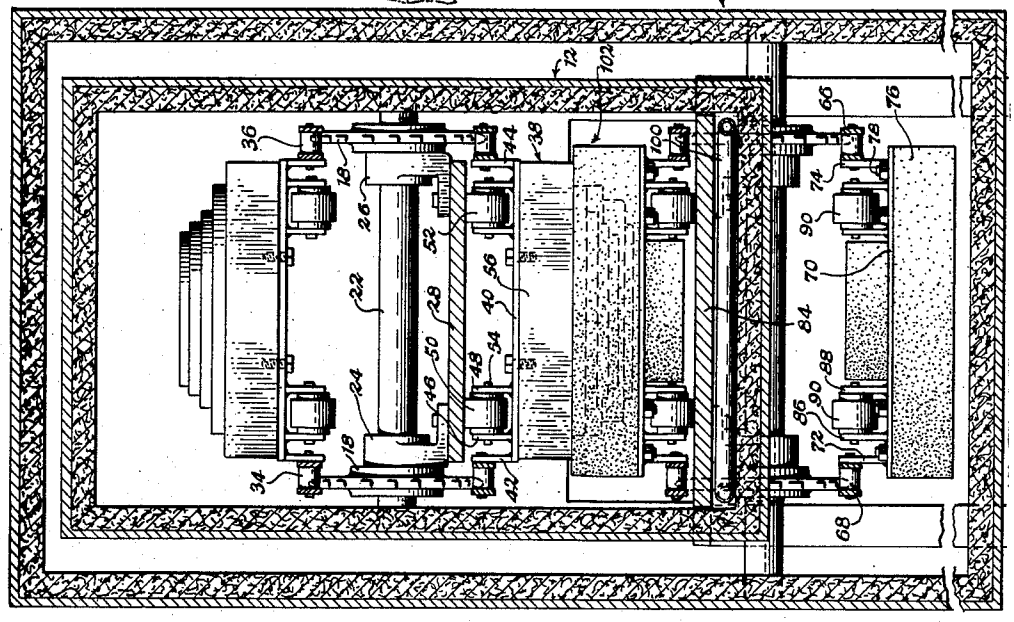


Fig. 2.

INVENTORS
JOHN C. KALUZNY
DAVID MEYER
RICHARD E. McPHERSON

BY Beau, Brooks, Buckley & Beau
ATTORNEYS

Dec. 1, 1964 J. C. KALUZNY ETAL 3,159,011

APPARATUS FOR MANUFACTURE OF FLYING TARGETS

Filed July 6, 1962 3 Sheets-Sheet 3

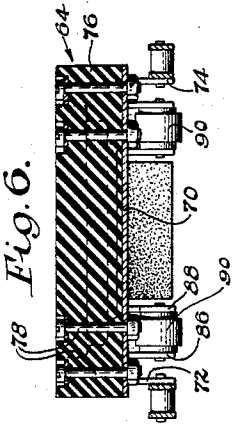


Fig. 6.

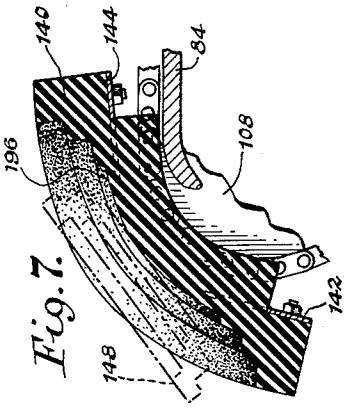


Fig. 7.

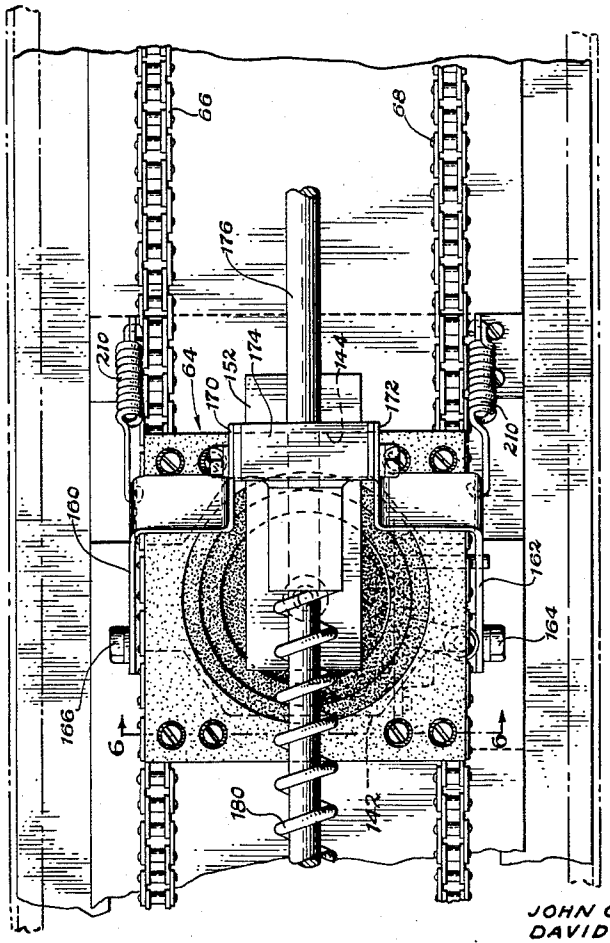


Fig. 5.

INVENTORS
JOHN C. KALUZNY
DAVID MEYER
RICHARD E. McPHERSON

BY

Bean, Brooks, Buckley & Bean
ATTORNEYS

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3,159,011

APPARATUS FOR MANUFACTURE OF FLYING TARGETS

John C. Kaluzny, 78 N. Freeman Road, Orchard Park, N.Y.; David Meyer, 55 Meadow Lane, Kenmore, N.Y.; and Richard E. McPherson, 34 Walkowiak St., Buffalo 25, N.Y.

Filed July 6, 1962, Ser. No. 208,006
11 Claims. (Cl. 62—345)

This invention relates to apparatus for making articles of ice and pertains more particularly to apparatus for making frangible targets suitable for use in conjunction with trap shooting.

The targets used in trap shooting are conventionally made of clay or other suitable frangible material and even though such material be inexpensive, the same does nevertheless constitute some degree of expense. It is of primary concern in connection with the present invention to provide apparatus for making target projectiles which are of substantially no expense and, to this end, it is a main objective of this invention to provide a machine for making target projectiles of ice. Aside from the cost factor above mentioned, certain other advantages accrue to the use of target projectiles for the purposes specified which are made of ice. For example, conventional targets give rise in their use to a substantial amount of debris in the area of the target range and although the amount of debris from any one target may not be substantial, accumulations of such debris do nevertheless constitute a problem which must be dealt with. In accordance with the present invention, the projectiles made by the herein disclosed apparatus leave no debris which requires policing or cleaning up since the target debris being shards or particles of ice, will simply melt.

A further advantage of targets made with the instant invention resides in the fact that an infinite variety of colors may be imparted thereto by the simple expedient of introducing suitable coloring or dye material into the water which is used to form the ice projectiles. Furthermore, it also becomes an easy matter to introduce various other substances and materials into the water so as to render the targets phosphoresent, fluorescent or luminescent, as may be desired.

It is a further object of the present invention to provide an apparatus for the purposes above described which possesses physical characteristics such as to achieve simplicity and compactness to a degree which will render the apparatus useful both for on-the-site installation, for remote installation or for installation where and as desired.

Still another object of this invention resides in improvements in apparatus for producing molded articles in general wherein female die members are so constructed and arranged as to automatically effect stripping and expulsion of the molded articles therefrom subsequent to their formation.

Another object of this invention resides in the arrangement of a pair of endless conveyor means in which such conveyor means are so interrelated and disposed positionally with respect to each other as to cause periodic interengagement of male and female die members carried by such conveyor means.

Other objects and advantages of the invention will appear from the description hereinbelow and the accompanying drawings wherein:

FIG. 1 is a vertical section taken through apparatus constructed in accordance with the present invention illustrating various details of its internal construction and further illustrating relative movement between component parts and the apparatus;

FIG. 2 is an enlarged vertical section taken substantially along the plane of section line 2—2 in FIG. 1 showing details of construction of the conveyor means and their associated male and female die members;

FIG. 3 is an enlarged elevational view partly in section illustrating the water introducing means;

FIG. 4 is a sectional view taken substantially along the plane of section lines 4—4 in FIG. 3 illustrating details of the valve actuating mechanism for the water introducing means and also showing the manner in which motion is imparted to the water introducing means;

FIG. 5 is an enlarged plan view showing the portion of the lower conveyor means and the water introducing means;

FIG. 6 is a transverse section taken substantially along the plane of section lines 6—6 in FIG. 5 illustrating details of construction of one of the female die members;

FIG. 7 is a sectional view illustrating the stripping and expelling action of the female die members;

FIG. 8 is an enlarged section taken through a mating pair of the male and female die members illustrating the mold cavity formed therebetween and further illustrating the die member positioning or stabilizing means associated therewith; and

FIGS. 9 and 10 are views of the finished product.

Referring now more particularly to FIG. 1, reference character **10** indicates in general an insulated cabinet which may take any form desired and within which there is provided a compartment **12**, likewise insulated, both of which insulated components are of substantial horizontal extent for purpose which will be presently ascertained. The invention also includes first and second endless conveyor means indicated generally by reference characters **14** and **16**, which conveyor means are disposed in partial overlapping relationship in a manner presently more particularly set forth. The upper or first conveyor **14** is provided with guide means disposed in horizontally spaced relationship which may take the form of idler sprockets **18** at one end of such conveyor means and driven sprockets **20** at the opposite end of such means. FIG. 2 illustrates the mounting for such sprocket means and, as shown therein, it will be appreciated that the idler sprockets **18** are mounted upon a common shaft **22** suitably journaled as by pillow blocks or brackets **24** and **26** so that the shaft **22** is disposed in horizontal transversely extending attitude, the brackets **24** and **26** being suitably affixed to a support plate member **28**. The driven sprockets **20** are mounted in a similar fashion upon a common shaft **30** which also is provided with a drive pinion **32** by means of which rotation is imparted to the shaft **30** to drive the conveyor means **14**. The conveyor itself may comprise a pair of endless chains **34** and **36**, see particularly FIG. 2, which are bridged and interconnected by a series of longitudinally spaced male die members indicated generally by reference character **38**.

As can be seen in FIG. 2, each of the members **38** includes a mounting means in the form of a transverse plate **40** having upstanding ears **42** and **44** at its opposite ends which are pivotally attached to the links of the chains **34** and **36**. Preferably, this pivotal connection of the ears **42** and **44** is achieved by extending appropriate pins which form pivotal interconnection between adjacent links of the chain. The strips or plate **40** also mount upstanding bracket ears **46** and **48** arranged in pairs as is shown and rotatably supporting therebetween roller members **50** and **52** by means of suitable journal pins **54** substantially as is shown. These rollers **50** and **52** are adapted to engage the under surface of the support plate **28** which, thereby, acts also as a guide member, the purpose of which will be more clearly apparent hereinafter. The strips or plates **40** in each case are suitably attached to the body members **56** which constitute the male die member proper. This body **56** is shown more clearly in FIG.

8 of the drawing wherein it will be seen that the body is provided with a hollow interior 58 and is provided with a stepped lower surface as indicated by reference character 60, one of the steps 62 defining a downwardly facing annular shoulder for seating engagement upon the body of the female die member 64 associated therewith.

The endless conveying mechanism 16 is constructed in somewhat similar fashion to the conveyor mechanism 14 in that it includes a pair of spaced, parallel endless chain members 66 and 68, see particularly FIG. 5 which are bridged or interconnected by the female die members which, as previously described, are indicated generally by the reference character 64. The means of attaching each of the female die members 64 to the chains 66 and 68 is through the medium of a pair of attaching means which are spaced longitudinally along the links of the chain. As is shown in FIG. 6, each of such attaching means includes a transverse plate member 70 provided with depending ears 72 and 74 which, like the ears 42 and 44 of the male die members, are attached to the corresponding chains 66 and 68. The plates 70 proper are in turn rigidly affixed to the main body portions 76 of the female die members by means of suitable fastening elements such as bolts 78 as illustrated. Naturally, other suitable attaching means such as bonding or the like may be utilized if desired.

The female die member in each case is provided with a stepped concavity 80, see particularly FIG. 8, and is also provided with a flat upper surface 82 providing a seat for the shoulder 62 of the male die member so that interengagement of these component parts may be achieved in the fashion indicated in FIG. 8. Underlying the upper flight of the conveyor mechanism 16 is a support and guide plate 84 whose function and purpose is similar to the plate 28 previously described in conjunction with the conveying mechanism 14. The supporting plates 70 of the female die members also carry brackets 86 and 88, see FIG. 6, rotatably supporting the rollers 90 which bear against the upper surface of the plate 84. Thus, the plates 28 and 84 together with the roller means of the associated male and female die members provide for proper interengagement between the male and female die members so that the proper die cavity is formed therebetween which, being filled with a quantity of water 94 as is shown in FIG. 8, may form the target projectile.

As can be seen more clearly in FIG. 1, the compartment 12 is provided with suitable refrigerating means such as the coils or refrigerating pipes 100 located directly beneath the plate 84 so that in the region of the interengaged male and female die members indicated by reference character 102 in FIG. 1, a substantial degree of refrigeration will be effected. It will also be seen from FIG. 1 that the underlying endless conveying means 16 is of materially greater length than the conveying means 14 and the two are so disposed in stacked relationship to each other that the lower flight 104 of the upper conveyor mechanism 14 is disposed parallel to the upper flight 106 of the lower conveyor means 16. At the same time, the length of the conveying means 16 is sufficient to enable the location of the guide sprockets or means 108 and 110 within the confines of the insulated cabinet 10 rather than the compartment 12 and such guide means are so disposed as to align the upper flight 106 to pass through the compartment 12, suitable end wall openings being provided in such compartment for this purpose. Each of such openings may be provided with a suitable flexible flap or cover 112 or 114 which will normally close at least a substantial extent of such openings to prevent excessive loss of heat into the compartment 12. Because the water is introduced into the female die members in the region of the cabinet 10, it is preferred that the temperature thereof remain somewhat above the freezing point and yet, at the same time, it is desirable that the ambient temperature thereof be sufficiently low as to lend good efficiency to the entire apparatus. The ambient temperature of the compartment 12 is, on the other hand, substantially below freezing and to such an extent as to cause rapid freezing of the articles being made so that the machine may be run at an efficient speed. To further enhance the efficiency of the device, it is preferred that the male die bodies 66 be formed of material such as aluminum for good and efficient conductivity, as will be well understood.

The aforementioned guide means 108 and 110 for the lower conveyor means 16 are similar to the previously described guide means 18 and 20 for the upper conveyor. That is to say, each comprises a pair of sprocket wheels engaged with the respective chains 66 and 68 and affixed to a common shaft in each case, such shafts being indicated by reference characters 116 and 118. The driven guide means 108 may be utilized for effecting a drive to an article discharging conveyor indicated generally by the reference character 120 and, for this purpose, a suitable pulley may be affixed to the shaft 116 outboard of the sprockets fixed thereto and a belt 122 may be utilized to effect drive to the conveyor shaft 124. The conveyor shaft 124 may be provided with a suitable roller or the like 126 training one end of an endless conveyor belt 128 thereover, a suitable idler roller 130 being provided exteriorly of the cabinet 10 in the fashion shown to convey finished articles such as those indicated by reference character 132 exteriorly of the assembly.

The other guide means 110 is utilized for driving purposes and, to this end, a suitable electric motor or the like 134 may be mounted as shown and may be provided with a belt drive 136 to the shaft 118. The shaft 118 also carries a drive sprocket or gear 138 which, through the medium of chain 140 effects drive to a countershaft 142 having a gear 144 mounted thereon. This latter gear 144 is in mesh with the previously mentioned gear 32 affixed to the drive shaft 30 of the upper conveyor means 14. Thus, it will be appreciated that the two conveyor means 14 and 16 are driven in unison and in predetermined relationships to each other so that the interdigitation between the male and female die members thereof takes place sequentially as will be clear from a study of FIG. 1.

As previously mentioned, the male die members 38 are pivotally attached to their endless chain means so that these members may flop around relatively freely and this relationship permits of easier interengagement or interdigitation between the male and female die members since the male die members, being so mounted, are permitted to pivot and therefore align themselves properly with the corresponding female die members. This action also permits the disengagement between male and female die members to be effected without damaging the finished articles. That is to say, the withdrawal of the male die members from the solidified finished target which remains within the female die members is more easily effected by virtue of the pivotal mounting of the male die members.

At the same time an additional feature of the present invention resides in the specific mounting of the female die members as previously described in conjunction with FIG. 6. As was described, each of the female die members is attached to its respective chains at longitudinally spaced points along these chains and there is no rigid element intervening between these attachment means, the bodies of the female die members being made of flexible material such as rubber or the like. Thus, as can be seen in FIG. 1, at the discharge end of the mechanism and particularly the conveyor 16, the guide means 108 will deform the main bodies of the female die members and effect a stripping action so that the finished articles may readily fall onto the discharge conveyor belt 128. This relationship is shown more clearly in FIG. 7 of the drawing wherein, as shown, the flexible or rubber body 140 of the female die member will be seen to have been deformed by virtue of the chains passing over the guide means 108 so that the spaced apart attaching members 142 and 144 for the body 140 will tend to deform the same in the fashion shown so that the die cavity 146 there-

of will be enlarged by stretching and deformation of the body 140 to strip and readily expel the finished target 148 therefrom.

As can be seen in FIG. 1, water introducing means indicated generally by the reference character 150 is employed within the confines of the cabinet 10 exteriorly of the compartment 12 and in such fashion as to introduce water into the female die members just prior to their entry into the confines of the compartment 12. Such means 150 takes essentially the form of a valve body member 152 having flexible supply connections 154 and 156 leading thereto from a suitable external source and having a discharge conduit 158 leading therefrom substantially as is shown. One of the supply connections extends to a suitable source of water while the other may extend to a suitable source of dye material, fluorescent or phosphorescent material, or the like, for the purpose of imparting desired optically discernible characteristics. When the system is so used, the valve 152 would of course have suitable mixing characteristics. As can be seen more clearly in FIG. 5, the valve body 152 is movably carried by means of a pair of arm members 160 and 162 which are pivotally mounted at their lower ends, as by means of suitable members 164 and 166, to the frame of the machine and which extend upwardly from such pivotal connections in straddling relationship to the chains 66 and 68 to pass above the upper flight of the conveying means 16 and terminate in upstanding arm portions 170 and 172 pivotally mounting a guide block 174 therebetween. The guide block 174 is carried slidably along a bar member 176 and is normally urged to a retracted position by means of a compression spring 180. However, the carrying means for the valve body 152 is swingable through an arc as is indicated by the arrow 182 in FIG. 1.

The valve body 152 may be either rigidly fastened to the guide block 174 or carried between the upper end portions of the arms 160 and 162, the former type of connection being preferred, as is seen in FIG. 3 wherein the guide block 174 and the body 152 are joined as by the web or interconnecting means 190. FIG. 3 also illustrates the means for initially positioning the valve body 152 which may simply take the form of suitable stop pins 192 mounted on the frame 194 of the machine and projecting laterally outwardly therefrom to provide stop surfaces against which the arms 160 and 162, as the case may be, abut in a desired extreme right-hand arcuate position of the members 152 and 174. The valve body 152 may incorporate any suitable electrically controlled valve mechanism of the one-shot type adjustable to discharge, through the nozzle or conduit 158 a predetermined quantity of water each time the electrical mechanism is actuated. To effect the energization of such valve mechanism, the frame 194 carries a suitable microswitch, not shown, having an actuator in the form of a pivoted arm 200 carrying a roller 202, see particularly FIG. 4, which is so disposed as to be engaged by one or the other of the arms 160 and 162 as the same are arcuately moved as indicated between full and dotted lines in FIG. 3. Consequently, every time the arms are swung, the one-shot valve mechanism is operated to introduce the requisite quantity of fluid into the registered female die member such as that indicated by reference character 204 in FIG. 3. In order to cause movement of the arms 160 and 162, the chains 66 and 68 of the lower conveyor means 16 are provided at longitudinally spaced points thereon with laterally outwardly projecting link pins 206, see particularly FIG. 4, which are adapted to strike against abutment members 208 fixed to the inner sides of the arms 160 and 162. The abutment means or fingers 208 are of such dimensions as to normally be placed in the path of movement of the pins 206 and, when engaged thereby, cause the arms 160 and 162 to be carried along with the chains until such point as the pins 206 ride over the upper ends of the fingers 208, thereby releasing the arms and permitting them to swing to their normal position against the stops 192. Whereas the compression spring 180 assures a quick return of the arms 160 and 162 and consequently of the valve body 152, auxiliary springs 210 connected between the arms 160 and 162 and suitable brackets 212 provided on the frame of the machine assure proper engagement of the arms 160 and 162 against their stops 192, it not being necessary in the full line position of the elements as shown in FIG. 3 that the compression spring 180 be exerting any force whatsoever for returning the arms 160 and 162. As has been stated, the main purpose of the spring 180 is to assure a rapid return action of the valve body 152. Thus, the mechanism may be operated in a relatively fast rate of speed, limited only by the rapidity with which the introduced water can be frozen within the compartment 12 which, as a matter of actual fact, can be accomplished relatively quickly particularly in view of the fact that the projectiles, as are shown in FIGS. 9 and 10, are of relatively thin section and thus can be effected to a frozen condition in relatively short order. Thus, the valve block 152 as it moves along under the action of the arms 160 and 162, discharges the requisite quantity of water into the mold cavities of the female die members and then is returned with a rapid action for introduction of the next shot of material into the next succeeding female die member.

Even though the bodies of the female die members are flexible and/or resilient, the specific mounting means hereinbefore inbefore specified assures that they will be in proper shape and position when the interdigitation between male and female die members takes place. This is further enhanced by the guide rollers associated with the female die members and of course the same obtains for the male die members. That is to say, insofar as the male die members are concerned, they will be properly oriented in vertical height at least by their associated rollers bearing aginst the plate 28. It is to be noted that the deformation of the female die members takes place after the guide rollers thereon pass from engagement with the plate 84, thereby obviating an accurate disposition of an arcuate portion of such plate 84 as would otherwise be necessary in order to avoid undue stresses on the chains 66 and 68 and in order to avoid any tendency to derail such chains from the guide means 108. It will be appreciated, further, that the targets as indicated by reference character 214 in FIGS. 9 and 10 may be of any desired shape or configuration, but it is preferred that in any case they are of relatively thin section so as to enable the refrigerating means to most rapidly and efficiently effect a freezing action and thus complete the article, thereby permitting the conveyors to be run at a relatively high speed. Furthermore, it is also preferred that the entire assembly as hereinbefore described be of an integral unitary structure, including a suitable compressor 216 and condenser 218 for the refrigerating means and any suitable associated mechanism therefor. In this fashion, the entire assemblage may be placed at any desired point as for example immediately adjacent the target projectile launching means if so desired. Of course, the mechanism as above described may also be placed in a remote point and the finished targets simply refrigerated until used.

It is to be understood that certain changes and modifications as illustrated and described may be made without departing from the spirit of the invention or the scope of the following claims.

We claim:

1. Apparatus for making projectile targets, comprising an insulated cabinet,

an insulated compartment disposed within said cabinet,

endless conveyor means disposed within said cabinet and having a flight portion running through said compartment,

second endless conveyor means disposed within said compartment and having a flight portion spaced from

and opposed to the stated flight portion of the first endless conveyor means,

a series of female die members carried by the first endless conveyor means,

means for introducing a quantity of water into said female die members prior to their introduction into said compartment,

a series of male die members carried by said second endless conveyor means for projection into said female die members as the same are carried through said compartment, and

refrigerating means in said compartment.

2. Apparatus for making target projectiles of ice, comprising

a pair of endless conveyors having overlapping and spaced apart generally rectilinear flight portions,

a series of metallic male die members carried in longitudinally spaced reation on one of said conveyors and a series of resilient female die members carried in longitudinally spaced relation on the other of said conveyors,

means for driving said conveyors in unison so that corresponding male and female die members are interengaged only in mutually opposed regions of said flight portions of the two conveyors,

means for introducing water into said female die members prior to interengagement with said male die members,

means for refrigerating said male and female die members while interengaged,

said flight portion of said other conveyor having an exposed portion extending beyond, in the direction of conveyor drive, said flight portion of said one conveyor,

and means for deforming said female die members in said exposed portion of the other conveyor to strip and expel targets from such female members.

3. Apparatus for making target projectiles of ice, comprising

a pair of endless conveyors, each including horizontally spaced guide members over which an endless carrier is trained,

said conveyors being disposed in vertically registered position so that the lower flight of the upper conveyor is spaced above and parallel to the underlying upper flight portion of the lower conveyor,

the guide members of the upper conveyor being spaced apart a lesser distance than the spacing between the guide members of the lower conveyor so that the upper flight of the lower conveyor extends beyond both ends of the lower flight of the upper conveyor,

refrigerating means enclosing said upper conveyor and the underlying flight portion of the lower conveyor,

means for driving said conveyors in unison,

a series of longitudinally spaced female die members carried by the lower conveyor and a series of longitudinally spaced male die members carried by the upper conveyor,

the male and female die members being dimensioned and spaced so as to interengage to form a die cavity therebetween in the region of the opposed flight portions of the two conveyors, and

means for introducing a quantity of water into said female die members prior to projection of the male die members thereinto.

4. The assembly as defined in claim 3 wherein

each resilient female die member is fixed to the lower conveyor at two longitudinally spaced points thereon so that each such die member will be flexed and deformed as the endless carrier passes over said guide members.

5. Apparatus for making targets of ice, comprising

a supporting frame assembly mounting refrigerating means and drive means,

an insulated cabinet mounted on said frame assembly and having an insulated compartment therein,

an endless conveyor disposed in said cabinet having a horizontal flight portion passing through said compartment,

an endless conveyor disposed in said compartment having a horizontal flight portion positioned in spaced parallel relation above the stated flight portion of the first mentioned endless conveyor,

said refrigerating means including a heat exchanger disposed in said compartment,

the first mentioned conveyor having a plurality of female die members fixed thereto in longitudinally spaced relation,

the second mentioned conveyor having a plurality of male die members fixed thereto in longitudinally spaced relation,

said drive means being connected to impart movement to both of said conveyors so as to interengage the male and female die members within the stated flight portions of the conveyors, and

means mounted on said frame assembly for introducing a predetermined quantity of water into each female die member prior to its entrance into said compartment.

6. Apparatus for making targets of ice, comprising

a supporting frame assembly mounting refrigerating means and drive means,

an insulated cabinet mounted on said frame assembly and having an insulated compartment therein,

an endless conveyor disposed in said cabinet having a horizontal flight portion passing through said compartment,

an endless conveyor disposed in said compartment having a horizontal flight portion positioned in spaced parallel relation above the stated flight portion of the first mentioned endless conveyor,

said refrigerating means including a heat exchanger disposed in said compartment,

the first mentioned conveyor having a plurality of female die members fixed thereto in longitudinally spaced relation,

the second mentioned conveyor having a plurality of male die members fixed thereto in longitudinally spaced relation,

said drive means being connected to impart movement to both of said conveyors so as to interengage the male and female die members within the stated flight portions of the conveyors,

means mounted on said frame assembly for introducing a predetermined quantity of water into each female die member prior to its entrance into said compartment,

said female die members being made of resilient material, and

means for deforming said female die members subsequent to exit from said compartment to strip the finished article therefrom.

7. Apparatus for making flying targets of ice, comprising

an insulated cabinet structure having an insulated compartment therein,

means for refrigerating said compartment,

a pair of sprocket means mounted in horizontally spaced relation in said cabinet,

an endless conveyor trained over said sprocket means and passing through said compartment,

a plurality of female die members carried by said endless conveyor in longitudinally spaced relation thereon,

an endless conveyor mounted in said compartment and carrying a plurality of male die members for interengagement with said female die members as they pass through said compartment,

means for introducing a quantity of water into each

female die member prior to its introduction into said compartment,

each female die member being formed of resilient material and being fixed to the associated endless conveyor at longitudinally spaced points thereon, whereby the female die members will be deformed as the portions of the conveyor carrying the same pass over said sprocket means.

8. Apparatus for making projectile targets, comprising

an insulated cabinet,

an insulated compartment disposed within said cabinet,

endless conveyor means disposed within said cabinet and haivng a flight portion running through said compartment,

second endless conveyor means disposed within said compartment and haivng a flight portion spaced from and opposed to the stated flight portion of the first endless conveyor means,

a series of female die members carried by the first endless conveyor means,

means for introducing a quantity of water into said female die members prior to their introduction into said compartment,

a series of male die members carried by said second endless conveyor means for projection into said female die members as the same are carried through said compartment,

refrigerating means in said compartment,

said means for introducing water including a valve device intermittently reciprocable longitudinally of the first conveyor means, and

means on said first conveyor means for moving said valve device therewith and in discharge registry with an associated female die member.

9. Apparatus for making projectile targets, comprising

an insulated cabinet,

an insulated compartment, disposed within said cabinet,

endless conveyor means disposed within said cabinet and having a flight portion running through said compartment,

second endless conveyor means disposed within said compartment and having a flight portion spaced from and opposed to the stated flight portion of the first endless conveyor means,

a series of female die members carried by the first endless conveyor means,

means for introducing a quantity of water into said female die members prior to their introduction into said compartment,

a series of male die members carried by said second endless conveyor means for projection into said female die members as the same are carried through said compartment,

refrigerating means in said compartment,

said means for introducing water including a valve device intermittently reciprocable longitudinally of the first conveyor means,

means on said first conveyor means for moving said valve device therewith and in discharge registry with an associated female die member,

means for rapidly returning said valve device opposite the movement of said first conveyor means, and

a microswitch actuated by initial movement of the valve device for controlling the same.

10. The assembly as defined in claim 8 wherein said valve device is provided with a pair of supply conduits, one of said conduits being adapted for connection to a water supply and the other of said conduits being adapted for connection to a liquid material supply for imparting color, fluorescence, phosphorescence and the like properties to the target.

11. The assembly as defined in claim 9 wherein said valve device is provided with a pair of supply conduits, one of said conduits being adapted for connection to a water supply and the other of said conduits being adapted for connection to a liquid material supply for imparting color, fluorescence, phosphorescence and the like properties to the target.

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