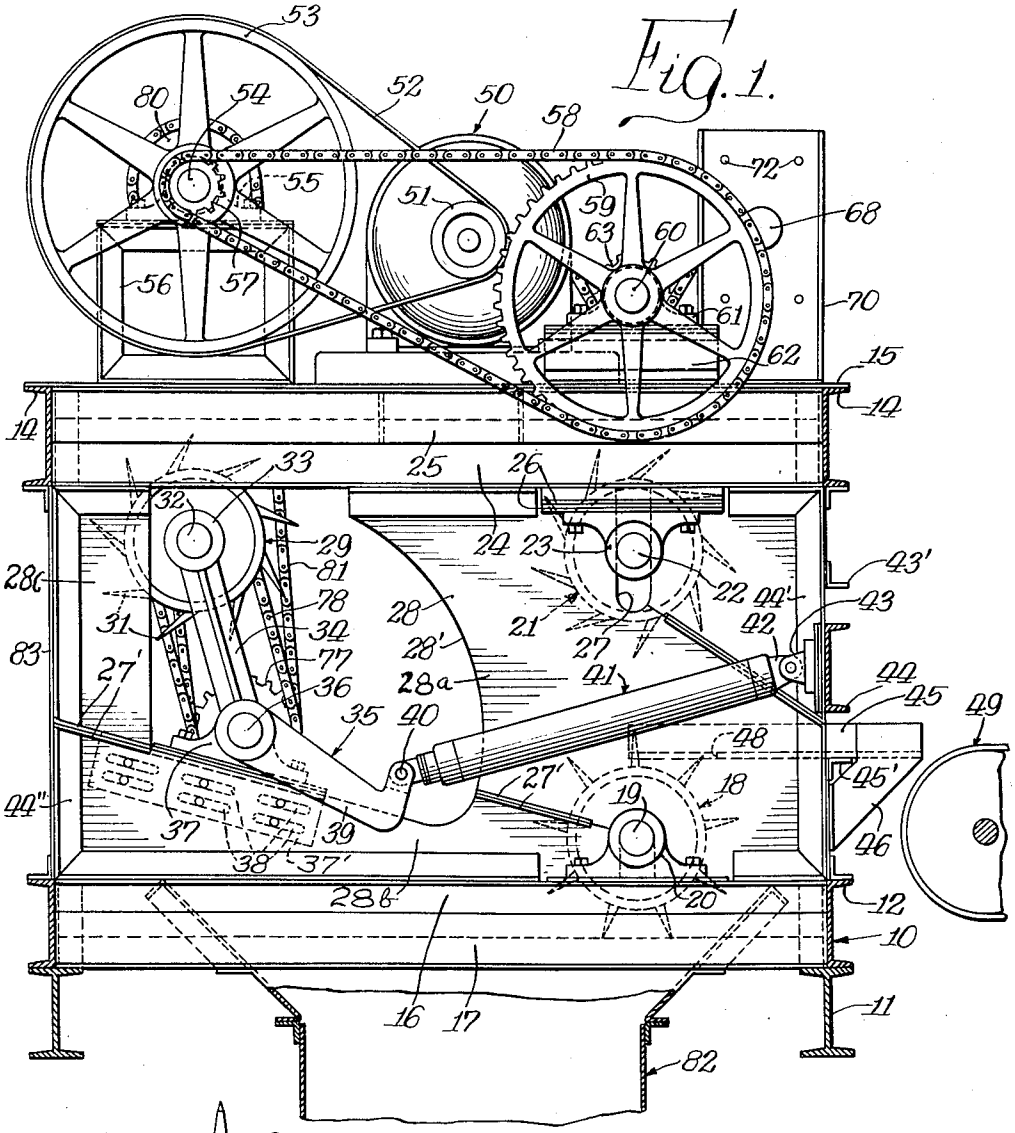
Jan. 9, 1951 H. O. McLAIN ET AL 2,537,779

ICE BREAKER OR CRUSHER

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Fig. 1.



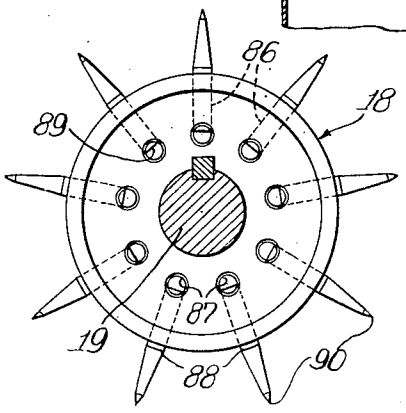


Fig. 8.

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ICE BREAKER OR CRUSHER

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Fig. 2.

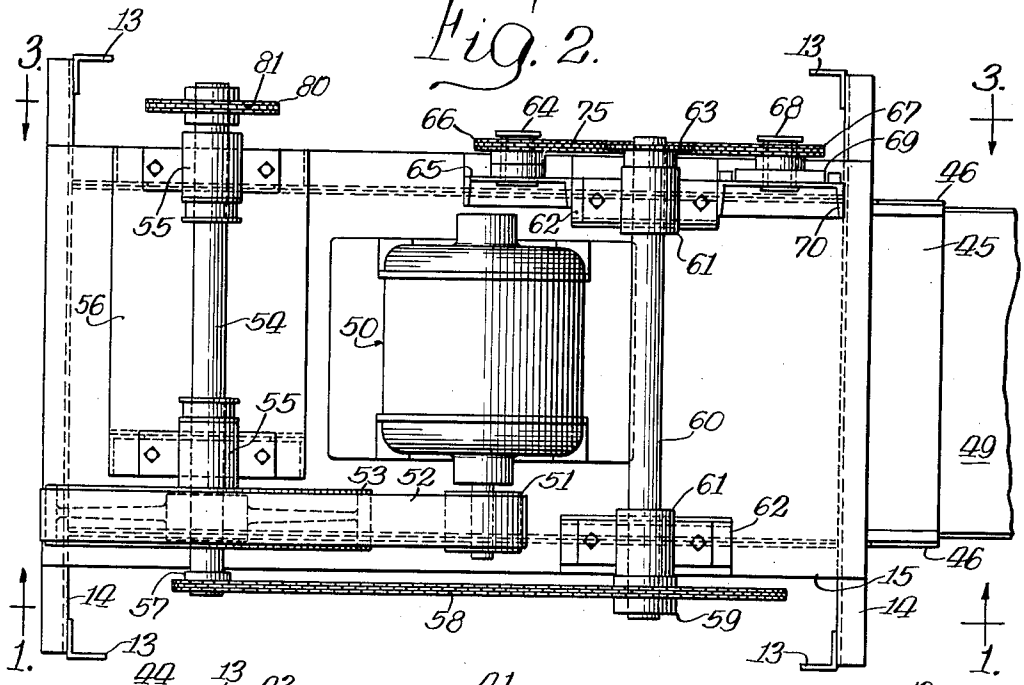
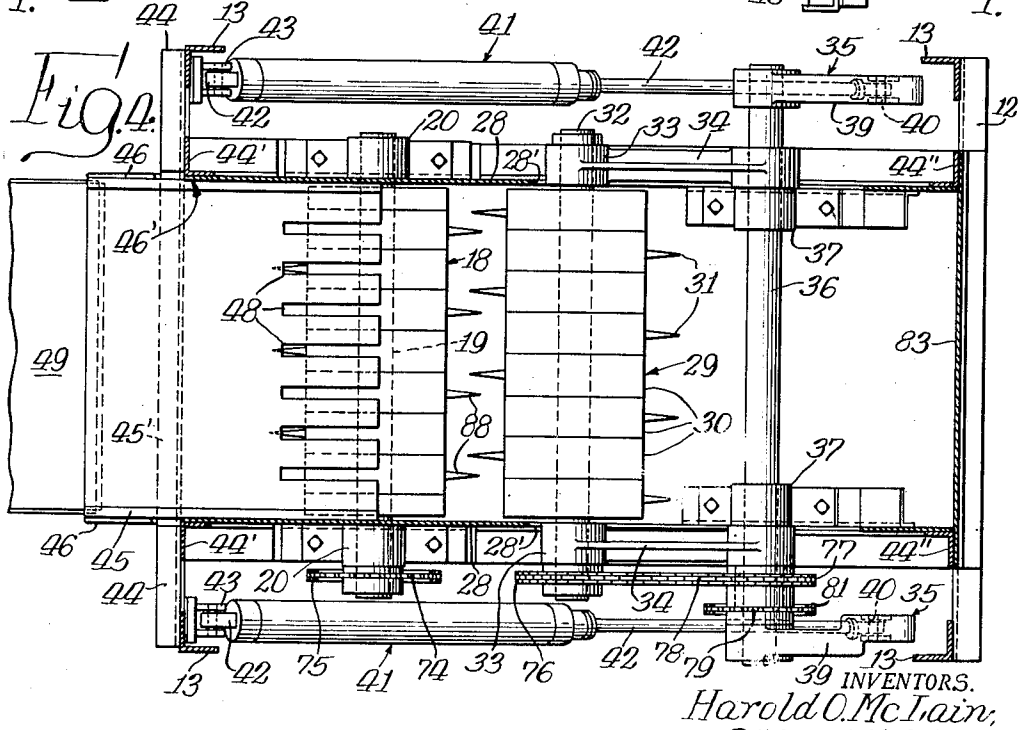


Fig. 4.



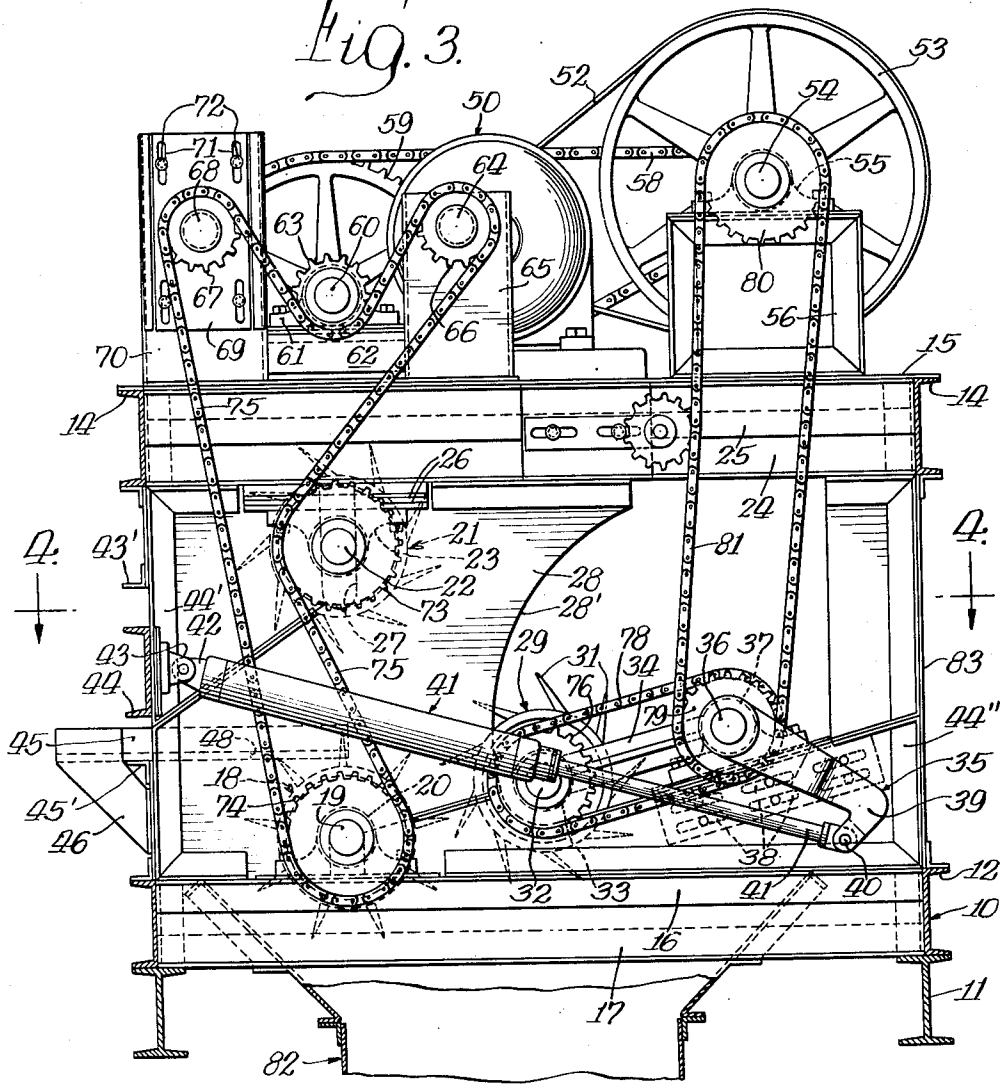
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ICE BREAKER OR CRUSHER

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Fig. 3.



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ICE BREAKER OR CRUSHER

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Fig. 5.

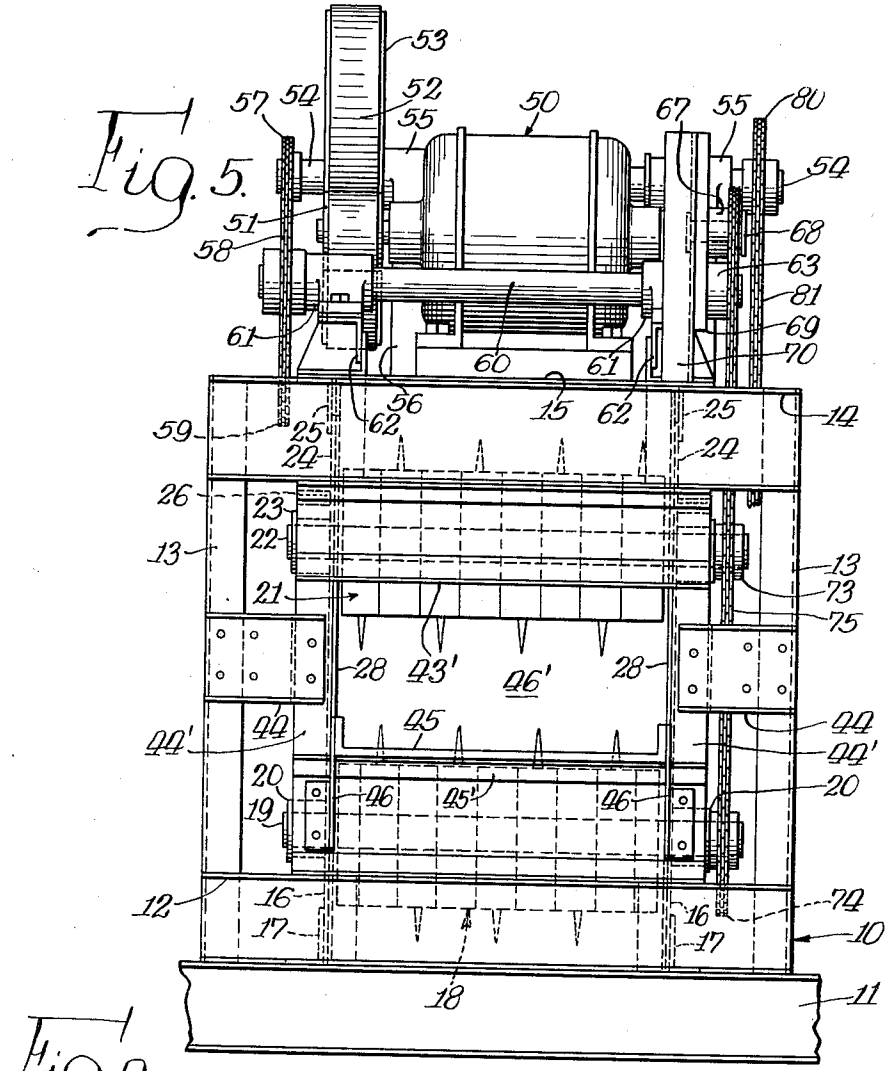


Fig. 9.

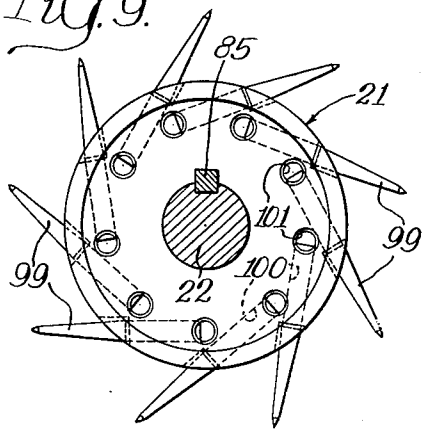
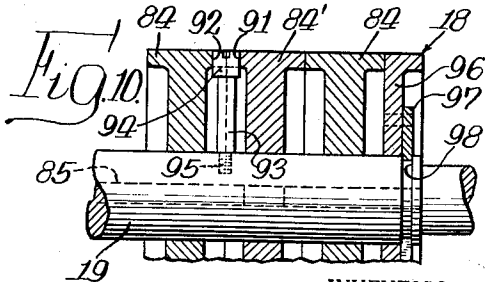


Fig. 10.



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ICE BREAKER OR CRUSHER

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Fig. 6.

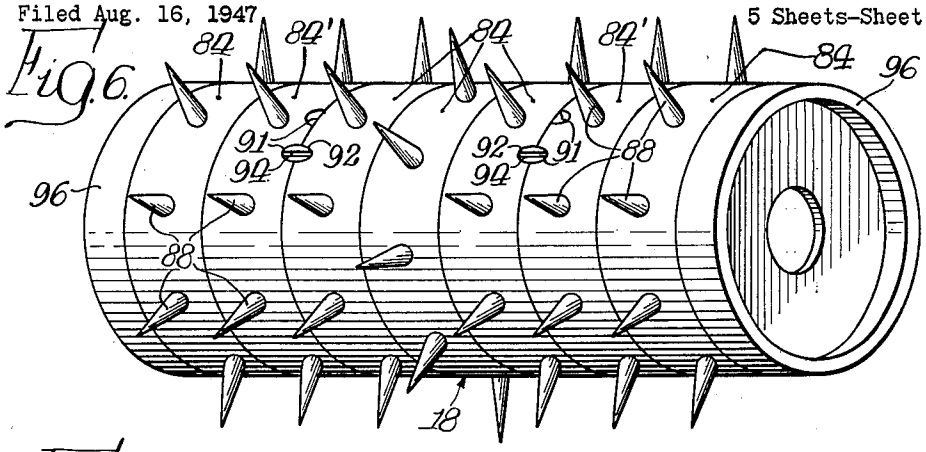
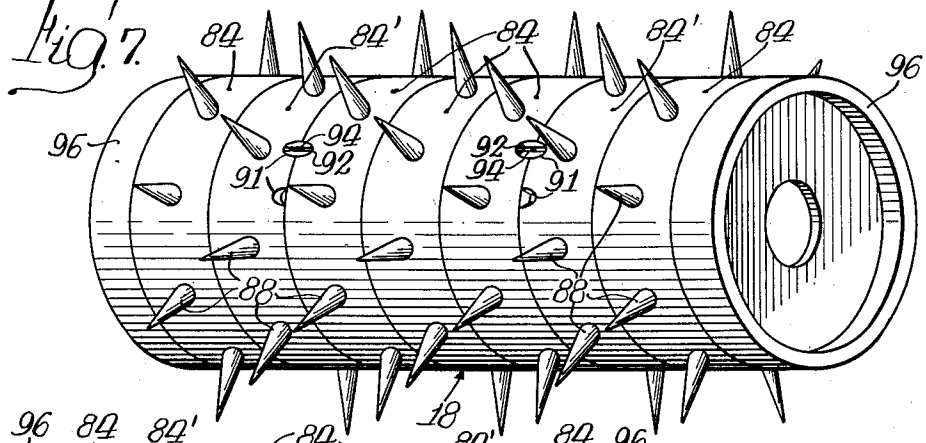


Fig. 7.



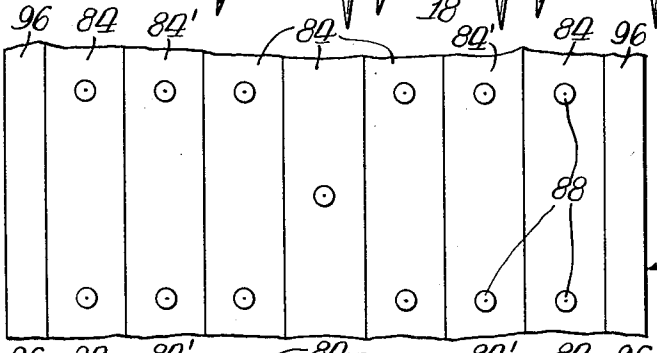


Fig. 11.

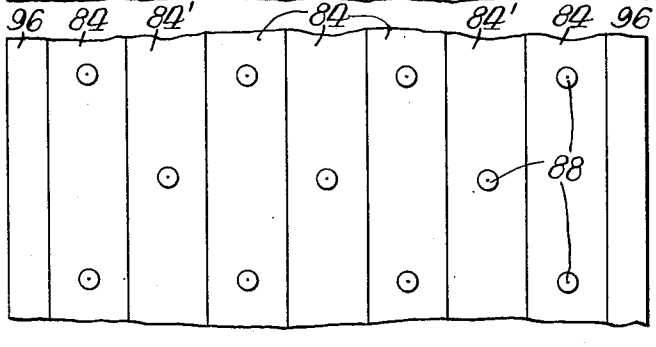


Fig. 12.

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UNITED STATES PATENT OFFICE

2,537,779

ICE BREAKER OR CRUSHER

Harold O. McLain, Highland Park, and Albert L. Blatti, Chicago, Ill.; Ruby Catherine Blatti, executrix of said Albert L. Blatti, deceased, assignor to said McLain

Application August 16, 1947, Serial No. 768,966

7 Claims. (Cl. 241—158)

1

The present invention relates generally to a novel, improved and more efficient ice breaker and crusher.

The primary object of the present invention is to provide a novel and improved ice breaker and crusher which will not only reduce ice blocks to a variety of different predetermined sizes of a range extending from relatively large chunks to finely crushed ice, but will also increase the capacity to a maximum so as to crush ice at the rate of approximately three or more tons per minute.

A further object of the invention is to provide a novel and improved ice crusher and breaker in which certain of the prongs in the ice crushing cylinders are arranged on movable or adjustable sections with certain of the sections rotatable with respect to certain other sections for varying the sizes of chunks of ice crushed by the cylinders.

A still further object of the invention is to provide a novel and improced ice crusher and breaker having certain of the crushing cylinders adjustable bodily with respect to certain other of the cylinders to more efficiently and with increased capacity crush the ice blocks to predetermined sizes.

A further object of the invention is to provide a novel and improved ice crusher and breaker in which certain of the crushing cylinders are driven at a relatively greater speed than certain other of the cylinders so as to more rapidly and efficiently reduce the ice blocks in predetermined sizes.

These and other objects are accomplished by providing a construction and an arrangement of the various parts in the manner hereinafter described and particularly pointed out in the appended claims.

Referring to the drawings:

Fig. 1 is a side elevational view, partly in section, of our improved ice crusher and breaker with certain of the frame members shown in section for the purpose of clearness;

Fig. 2 is a top plan view of the same;

Fig. 3 is a cross sectional view taken on the line 3—3 in Fig. 2 showing the bodily movable cylinder in its lowermost position;

Fig. 4 is a cross sectional view taken on the line 4—4 in Fig. 3 with the bodily movable cylinder in its lowermost position;

Fig. 5 is a front elevational view of the ice crusher and breaker;

Fig. 6 is a perspective view of the master crushing cylinder, showing the ice prongs thereof adjusted to one pattern;

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Fig. 7 is a perspective view of the same cylinder showing the ice prongs adjusted to a different pattern;

Fig. 8 is an end elevational view of the master crusher cylinder shown in Fig. 7;

Fig. 9 is an end elevational view of the crusher and feeder cylinder;

Fig. 10 is a fragmentary cross sectional view showing the manner in which the adjustable sections are locked in position in both the master and feeder cylinders;

Fig. 11 is a diagrammatic view of a portion of the cylindrical surface in flat form of one of the cylinders showing the manner in which certain of the sections may be adjusted for spacing the prongs on the cylinder in a certain pattern; and

Fig. 12 is another diagrammatic view of the same cylindrical surface in which the sections are adjusted so that the prongs of the cylinder assume a different pattern or in uniformly spaced relationship.

In illustrating one form our invention may assume in practice, we have shown the same as comprising a substantially rectangular main frame or base, generally indicated by the reference character 10, which is adapted and may be supported at the opposite ends thereof on suitable I-beams 11. The main frame 10 includes end channel members 12 to the opposite ends of which are secured vertically extending angle members or posts 13. Secured to the upper ends of the opposite end posts 13 are transverse channel members 14. Mounted on and supported by the channel members 14 is a flat sheet metal top or platform 15 on which an electric motor and countershafts, hereinafter described, are supported thereon. The opposite sides of the main frame 10 consist of upper and lower overlapping and longitudinally extending angle members 16 and 17 respectively. Rotatably mounted adjacent the forward end of the main frame and supported by opposite upper angle members 16 is our improved master crushing cylinder, generally indicated by the reference character 18. This master cylinder preferably consists of seven separate sections, certain of which are adjustable with respect to certain other sections. The details of this construction will hereinafter be more fully described. This master crusher or pronged cylinder 18 is carried by a transverse shaft 19 which, in turn, has its opposite ends journaled in bearing brackets 20 secured to the opposite angle members 16. Positioned parallel to and vertically above

and cooperating with the master cylinder 18 is a vertically adjustable ice crusher and feeder cylinder, generally indicated by the reference character 21. This crushing and feeding cylinder is similarly constructed in sections so that certain sections thereof are adjustable with respect to certain other sections for changing the location of certain of the pointed prongs for varying the size of the chunks to which the ice blocks are reduced, the details of which will hereinafter be more fully described. This cylinder 21 is carried and driven by a shaft 22. The shaft 22 has its opposite ends journaled in the opposite depending bearing brackets 23 which, in turn, are secured to the lower flange of each of the opposite angle members 24. The opposite ends of the angle members 24 are secured to the opposite end channel members 14. Overlapping each of the longitudinal angle members 24 are second angle members 25 which, in turn, have their opposite ends secured to the end channel members 14. The cylinder 21 may be vertically adjusted with respect to the master cylinder 18 by vertically adjusting the opposite brackets 23 through the medium of shims or spacer blocks 26. Vertical slots 27 are provided in opposite side walls or metal housing members 28 for permitting this adjustment.

Cooperating with our master crushing cylinder 18 and crushing and feeding cylinder 21 and effective to provide finely crushed ice when so desired, is a bodily movable and longitudinally adjustable supplemental ice crusher cylinder, generally indicated by the reference character 29. This cylinder 29 comprises a series of drum sections 30 of eight in number. The sections 30 carry a series of angularly disposed uniformly spaced ice prongs 31 which occupy angular positions tangent to a circle located within the periphery of the cylinder. Unlike the sections of the other two crushing cylinders, the sections 30 of this cylinder 29 are rigidly secured to a shaft 32. The opposite ends of this shaft are journaled in opposite bearing sleeves 33, which are formed integrally on the free ends of arms 34 of opposite bell-cranks generally indicated by the reference character 35. The intermediate portions of each of these bell-cranks 35 are pivoted on studs 36. The studs 36 are secured to each of the opposite brackets 37. The lower portions 37' of each of the opposite brackets 37 are provided with longitudinal slots, as shown at 38, for permitting longitudinal adjustment of the brackets 37. In this connection, it is an important feature of the invention that the supplemental crusher cylinder 29 be driven at a relatively greater speed than that of the other two crushing cylinders. From practical experience it has been shown that this particular cylinder should attain an R. P. M. of approximately seven times that of the other cylinders. Under such circumstances, the rapidly rotating cylinder shaves or finely crushes the ice by this rapid speed after it has been initially crushed into relatively large lumps or chunks prior to engagement by the cylinder 29. Also in this connection it will be observed that by longitudinally adjusting the opposite bearing brackets 37 so that the cylinder 29 may be spaced at various distances with respect to the other cylinders, the variation in the degree of finess of the crushed ice may be achieved.

Formed integrally with each of the bell-cranks members 35 is a second angularly disposed arm 39 which has its free ends pivotally connected, as

shown at 40, to one end of each of the opposite hydraulic cylinders, generally indicated by the reference character 41. These hydraulic cylinders are of the conventional type and are provided with the usual piston rod connections 42, which, in turn, are pivotally connected to opposite brackets 43. The brackets 43, in turn, are secured to the opposite vertical angles or posts 13 and relatively short channel braces 44. Extending horizontally and slightly above the periphery of the master cylinder 18 is a channel-like ice block guide 45 which is supported in position on the main frame by opposite plates 46. Opposite supplemental vertical frame members or angles 44' and 44'' are located at the opposite ends of and are secured to the main frame 10 and the transverse channels 14. Vertically spaced apart transverse angle members 43' and 45' have their opposite ends secured to the opposite vertical angles 44'. The angle member 45' forms an added support for the ice block guide 45. Located between the angle 43' and the guide 45 is an opening in the housing, as shown at 46' (see Fig. 5), through which the ice blocks are fed to the crushing cylinders. The guide 45 is provided with longitudinal slots in its inner end, as shown at 48, to permit the passage of the prongs of the master cylinder 18 therethrough. This guide is adapted to receive the ice blocks from a conventional conveyor, a fragmentary portion of which is shown and indicated by the reference character 49. (See Fig. 2 of the drawings.)

The power transmission and the manner of operatively driving our improved crusher and breaker will next be described. Mounted on the top of the casing or platform 15 thereof and substantially in the center, is an electric motor, generally indicated by the reference character 50. Through the medium of a drive pulley 51 on the drive shaft of the motor 50 and a belt 52, a relatively large pulley 53 is driven. The pulley 53 is secured to one end of a transverse countershaft 54. The shaft 54 is journaled in suitable spaced apart bearing brackets 55. The bearings 55 are mounted on a supplemental and substantially rectangular support or frame, generally indicated by the reference character 56. Secured to one end of the countershaft 54, adjacent the pulley 53, is a sprocket wheel 57 which is geared by means of a chain 58 to a sprocket wheel 59. The sprocket wheel 59 is secured to one end of a second countershaft 60. The countershaft 60 is journaled in suitable spaced apart bearings 61. The bearings 61 are mounted on suitable blocks 62 secured to the platform 15. Secured to the other end of the countershaft 60 is a sprocket wheel 63. Rotatably mounted to one side of the shaft 60 on a stud 64 carried by a channel bracket 65 is an idler sprocket wheel 66. The channel bracket 65 is secured to the platform 15, as clearly shown in Figs. 2 and 3 of the drawings. Mounted on the other side of the shaft 60 is an adjustable idler sprocket wheel 67 which is journaled on a stud 68 secured to a vertically adjustable plate 69. The plate 69 is vertically adjustably secured on a channel bracket 70 through the medium of vertical slots 71 and bolts 72. Secured to one end of the cylinder shaft 22 is a sprocket wheel 73. Secured to one end of the cylinder shaft 19 is a sprocket wheel 74. The sprocket wheels 73 and 74 of the respective crushing cylinders 22 and 18 are operatively driven by a drive chain 75 which is trained about these sprocket wheels and the drive sprocket wheel 63 and respective idler

sprocket wheels 66 and 67 in the manner clearly disclosed in Fig. 3 of the drawings.

The bodily movable ice crusher cylinder 29 is driven through the medium of a sprocket wheel 76 which is secured to one end of the cylinder shaft 32. Journaled on one of the studs 36 adjacent one of the bell-crank members 35 is a sprocket wheel 77. The sprocket wheel 77 is geared to the sprocket wheel 76 by a chain 78. Formed integrally with the sprocket wheel 77 is a second sprocket wheel 79. Secured to one end of the countershaft 54 is a sprocket wheel 80. The sprocket wheel 80 is geared to the sprocket wheel 79 by a drive chain 81. Positioned below and supported by the main frame 10 of the ice crushing device and adapted to receive the crushed ice from the ice breaker and crusher cylinders is a substantially rectangular hopper shown in broken lines and generally indicated by the reference character 82. From this point the ice may be conveyed by a conveyor, chute or elevator to the bunkers of the refrigerator car or by an impeller, as the case may require. The rear end of the housing opposite the opening 46' is completely enclosed by an end plate 83. The opposite side walls 28 of the housing are provided with arcuate cut-out portions or openings 28' to permit the swinging of the arms of the bell-cranks 35 in the movement of the crushing cylinder 29. The opposite side walls 28 are in the form of three separate pieces indicated at 28^a, 28^b and 28^c. These separate pieces have right angularly formed flanges, as shown at 27' for securing the contiguous flanges together.

As hereinbefore stated, one of the essential features of the present invention is a novel arrangement and construction of adjustable and sectional crushing cylinders so that by adjusting certain movable sections of these cylinders with respect to certain other fixed sections, the ice blocks may be crushed by two of the cylinders from sizes ranging from large size chunks of approximately forty pounds to relatively small size chunks of approximately three pound pieces or, if the operator desires to reduce the ice to a finely crushed state, such as is required for refrigeration of highly perishable goods, a third adjustable and bodily movable crushing cylinder may be brought into cooperation with the first two ice crusher cylinders for this purpose.

The construction of the sectional master crusher cylinder and its cooperating crusher and feeder cylinder and the manner of the adjustment of these sections so as to permit the pattern of the ice prongs carried thereby to either assume the position shown in Figs. 10 and 11 of the drawings so as to permit these crusher cylinders to crush or break the large blocks of ice into pieces ranging from approximately forty pound pieces to three pound pieces, will next be described. The master cylinder 18 and the cooperating or feeder cylinder 22 are both made up of disc or wheel-like sections 84 and 84'. Sections 84 are rigidly secured to their respective shafts 19 and 22 by suitable conventional keys 85. The disc or wheel-like sections 84' are movable or oscillatably mounted on the shafts 19 and 22 of the respective cylinders 18 and 21, and are adapted to be secured in either of two adjusted positions to change the pattern or position of the pronged teeth in the manner from that shown in Figs. 6 and 11 of the drawings to that shown in Figs. 7 and 12 of the drawings. The movable sections 84', of which there are two in number, in both cylinders 18 and 21, are located outside the three

centrally located stationary sections 84 as clearly shown in Figs. 6, 7, 11 and 12 of the drawings. All of the sections 84 and 84' of the master cylinder 18 are provided with nine equally spaced apart radially projecting tapered bores 86 which communicate with the transverse bores 87. Driven into each of these tapered bores 86 are nine tapered radially disposed ice prongs 88. The inner ends of these prongs are flat, as shown at 89, so that a tapered tool may be inserted into the bore 87 when removal and replacement is required. The outer ends of the ice prongs 88 are pointed, as shown at 90. The movable sections 84' may be moved or adjusted and secured in either one of two positions so as to change the pattern of the prongs from that shown in the diagrammatic Fig. 11 to that shown in Fig. 12 of the drawings. In order to secure the movable sections or lock them in either one of these positions, two semi-circular and radially disposed slots 91 are located on one side of each of the movable sections 84'. One of these semi-circular slots is positioned in transverse alignment with one of the ice prongs in the movable sections. The other semi-circular slot 91 is located or spaced from the first semi-circular slot a distance equivalent to one-half the spacing between two adjacent ice prongs. Complementary to either one of these slots 91 and located in the next adjacent fixed section 84 is a similar semi-circular and radially disposed slot 92. The movable sections 84' are secured in either one of these two positions by a locking bolt 93 which has an enlarged circular head 94 engageable with the complementary semi-circular recesses 91 and 92 when properly aligned. This locking bolt 93 is provided with an inner threaded end as shown at 95, which is adapted to engage the complementary threaded bore in the shaft 19. The outer ends of each of the cylinders 18 and 22 are provided with washer-like rings 96 which are held in fixed position by keeper plates 97. The inner ends of the plates 97 engage annular recesses or grooves 98 in the ends of the respective shafts 19 and 22. The cooperating or feeder cylinder 22 is constructed substantially like that of the master cylinder 18 except that ice prongs 99, of which there are nine in number also, are angularly disposed or pointed in the direction that is tangent to a common cylindrical surface located within the periphery of the cylinder proper. These prongs 99 are driven into tapered bores 100 which, in turn, communicate with transverse bores 101 in each of the sections 84 and 84' of the cylinder 22. In this connection it will be noted that by referring to Fig. 1 of the drawings, that the points of the prongs of the respective cylinders 18 and 21 are timed so that their pointed ends are in alignment at their nearest point of approach during the operation of penetrating or breaking the ice blocks.

A variation in the sizes of the ice chunks crushed by these cylinders 18 and 21 may be secured by merely adjusting the pattern of the ice prongs on one cylinder to the form shown in Figs. 6 and 11 of the drawings and adjusting the ice prongs on the other cylinder to the pattern shown in Figs. 7 and 12 of the drawings. This variation in the position of the ice prongs on the two cylinders will produce the intermediate predetermined sizes to which the ice may be crushed. This variation in sizes may be further augmented by adjusting vertically the cylinder 21 with respect to the cylinder 18.

Summarizing the advantages and the func-

tions of operation of our improved ice breaker and crusher device, it will be readily seen that when an ice block of three to four hundred pounds is fed from the conveyor 49 into the ice block guide 45 with the adjustable and bodily movable cylinder 29 in the raised or non-operative position, as shown in Fig. 1 of the drawings, and with the prongs adjusted to the position shown in the pattern shown in Fig. 11 (which is the same as shown in Fig. 6) of the drawings, these ice blocks will be broken up into relatively large chunks of approximately forty pounds each. This is occasioned by the fact that the prongs on the adjustable sections 84' are moved into alignment with the prongs of the fixed sections and thereby assume a widely spaced position about the periphery of the cylinder as disclosed in the pattern in the diagrammatic view shown in Fig. 11 of the drawings. However, when the movable sections 84' are adjusted to the other position and secured in that position in the manner hereinbefore described, then the prongs of all the sections assume a more closely spaced relationship about the periphery of the cylinder or assume a uniform pattern, or pattern like that shown in Fig. 12 (which is the same as that shown in Fig. 7) of the drawings. When the prongs are spaced in the latter position the ice blocks will be crushed into chunks of approximately three pounds. If the operator desires to secure crushed ice in chunks in sizes between these two extremes, then the different prong arrangement on the two cylinders may be employed as hereinbefore described and cylinder 21 may be adjusted vertically with respect to the cylinder 18 to accomplish this purpose. Should the operator desire to reduce these chunks to form relatively finely crushed ice, by the simple manipulation of operating the hydraulic cylinders 41, the bell-cranks 35 will actuate and swing the crushing cylinder 29 from the position shown in Fig. 1 to the position shown in Figs. 3 and 4 of the drawings, thereby moving the supplemental crushing cylinder to a position in close proximity to the master cylinder 18. In this connection it should also be noted that the speed of the crushing cylinders 29 is so geared that the R. P. M. thereof is approximately seven times that of the R. P. M. of the other two cylinders 18 and 21 and for that reason not only expedites the crushing operation, but also increases the capacity and efficiency of the ice crusher so that the same is capable of a capacity of approximately three or more tons of crushed ice per minute.

From the above description it will be readily seen that we have not only increased the efficiency and capacity of the ice breaker and crusher to a maximum, but have also provided a variety of adjustments which will permit the operator thereof to secure a crushing or a reduction of ice blocks to any predetermined sizes or from relatively large chunks up to finely divided crushed ice, all of which can be accompilshed at a high production speed.

While in the above specification we have described one embodiment which our invention may assume in practice, it will, of course, be understood that the same is capable of modification and that modification may be made without departing from the spirit and scope of the invention as expressed in the following claims.

What we claim as our invention and desire to secure by Letters Patent is:

1. An ice breaker and crusher comprising a frame, means for guiding a block of ice into the frame, two parallel shafts journaled in the frame with the said guiding means positioned therebetween, a cylinder structure mounted on each shaft, a plurality of axially spaced, circumferentially arranged sets of ice prongs projecting from the periphery of each cylinder structure, the sets of ice prongs of the two cylinder structures cooperating to break into chunks of substantially uniform size a block of ice guided between said cylinder structures, means for adjusting the relative spacing of said parallel shafts and their cylinder structures to vary the size of the chunks of ice produced by their cooperating sets of ice prongs, a third shaft journaled in said frame inwardly of and in parallelism with said two shafts, a cylinder structure mounted on the third shaft, a plurality of axially spaced, circumferentially arranged sets of ice prongs projecting from the periphery of the last mentioned cylinder structure, means for adjusting the third shaft and its cylinder structure relative to one of the first two mentioned shafts and its cylinder structure so that the third cylinder sets of ice prongs may be moved from inoperative position to cooperative relation to crush the chunks of ice produced by the cooperating sets of ice prongs of the first two mentioned cylinder structures, means for rotating the first two mentioned shafts at substantially the same speed, and means for rotating the third shaft at a speed several times greater than the speed of said first two shafts.

2. An ice breaker and crusher comprising a frame, means for guiding a block of ice into the frame, two parallel shafts journaled in the frame with the said guiding means positioned therebetween, a cylinder structure mounted on each shaft, a plurality of axially spaced, circumferentially arranged sets of ice prongs projecting from the periphery of each cylinder structure, the sets of ice prongs of the two cylinder structures cooperating to break into chunks of substantially uniform size a block of ice guided between said cylinder structures, means for adjusting certain of the assembled sets of ice prongs circumferentially of the remaining sets on at least one of said cylinders, means for securing said adjustable sets of ice prongs in different positions of adjustment, means for adjusting the relative spacing of said parallel shafts and their cylidner structures to vary the size of the chunks of ice produced by their cooperating sets of ice prongs, a third shaft journaled in said frame inwardly of and in parallelism with said two shafts, a cylinder structure mounted on the third shaft, a plurality of axially spaced, circumferentially arranged sets of ice prongs projecting from the periphery of the last mentioned cylinder structure, and means for adjusting the third shaft and its cylinder structure relative to one of the first two mentioned shafts and its cylinder structure so that the third cylinder sets of ice prongs may be moved from inoperative position to cooperative relation to crush the chunks of ice produced by the cooperating sets of ice prongs of the first two mentioned cylinder structures.

3. An ice breaker and crusher comprising a frame, means for guiding a block of ice into said frame, two parallel shafts journaled in said frame with the guiding means therebetween, a

cylinder structure mounted on each shaft, a plurality of axially spaced, circumferentially arranged sets of elongated ice prongs projecting from the periphery of each cylinder structure, the sets of ice prongs of the two cylinder structures cooperating to break into chunks of substantially uniform size a block of ice guided between the cylinder structures, a third shaft journaled in said frame inwardly of and in parallelism with said two shafts, a cylinder structure mounted on said third shaft, a plurality of axially spaced and circumferentially arranged sets of ice prongs projecting from the periphery of the last mentioned cylinder structure, means for supporting and adjusting the third shaft and its cylinder structure from a substantially inoperative position to a position adjacent the two mentioned cylinders to form a crushing gap with at least one of the first cylinders which is less than the gap between the first mentioned cylinders and means for rotating all of said shafts.

4. An ice breaker and crusher comprising a frame, means for guiding a block of ice into said frame, two parallel shafts journaled in said frame with the guiding means therebetween, a cylinder structure mounted on each shaft, a plurality of axially spaced, circumferentially arranged sets of elongated ice prongs projecting from the periphery of each cylinder structure, the sets of ice prongs of the two cylinder structures cooperating to break into chunks of substantially uniform size a block of ice guided between the cylinder structures, a third shaft journaled in said frame inwardly of and in parallelism with said two shafts, a cylinder structure mounted on said third shaft, a plurality of axially spaced and circumferentially arranged sets of ice prongs projecting from the periphery of the last mentioned cylinder structure, means for supporting and adjusting the third shaft and its cylinder structure from a substantially inoperative position to a position adjacent the two mentioned cylinders to form a crushing gap with at least one of the first cylinders which is less than the gap between the first mentioned cylinders and through which the ice crushed by the first cylinders must pass, and means for rotating the cylinders including means for rotating the third cylinder at a higher speed than the first cylinders.

5. An ice breaker and crusher comprising a frame, means for guiding a block of ice into said frame, two parallel shafts journaled in said frame with the guiding means therebetween, a cylinder structure mounted on each shaft, a plurality of axially spaced, circumferentially arranged sets of elongated ice prongs projecting from the periphery of each cylinder structure, the sets of ice prongs of the two cylinder structures cooperating to break into chunks of substantially uniform size a block of ice guided between the cylinder structures, swinging means carried by said frame, a third shaft journaled in said swinging means and located parallel with said two shafts, a cylinder structure mounted on said third shaft, a plurality of axially spaced and circumferentially arranged sets of elongated ice prongs projecting from the periphery of the last mentioned cylinder structure, means for adjusting the third shaft and its cylinder structure with respect to the other two cylinder structures during the rotation of all of said cylinders, and means for driving all of said cylinders including means for rotating the third cylinder at a higher speed than the first two cylinders.

6. An ice breaker and crusher comprising a frame, a first cylinder journaled on said frame, a cooperating crusher and feeder cylinder mounted on said frame, in a position parallel to and relatively widely spaced from said first cylinder, a third and bodily movable cylinder journaled on said frame, means for moving the third cylinder from non-crushing position to cooperative crushing position with said other cylinders, the spacing of the third cylinder with either one of the other cylinders when in cooperative crushing positions being less than the spacing between the first two cylinders, spaced elongated crushing prongs carried by all of said cylinders, and gearing means for driving all of said cylinders.

7. An ice breaker and crusher comprising a frame, a first cylinder journaled on said frame, a cooperating crusher and feeder cylinder mounted on said frame in a position parallel to and widely spaced from said first cylinder, a third and bodily movable cylinder journaled on said frame, spaced apart elongated prongs projected from said cylinders, and manually controlled means mounted on said frame and operatively connected to the third cylinder for bodily moving said third cylinder with respect to the first two cylinders from a non-crushing position through various size crushing positions with respect to the other two cylinders for crushing the ice in predetermined sizes.

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