G. W. SMEAD.

SHEET COOLING MACHINE.

APPLICATION FILED FEB. 1, 1912.

1,039,202.

Patented Sept. 24, 1912.

5 SHEETS—SHEET 1.

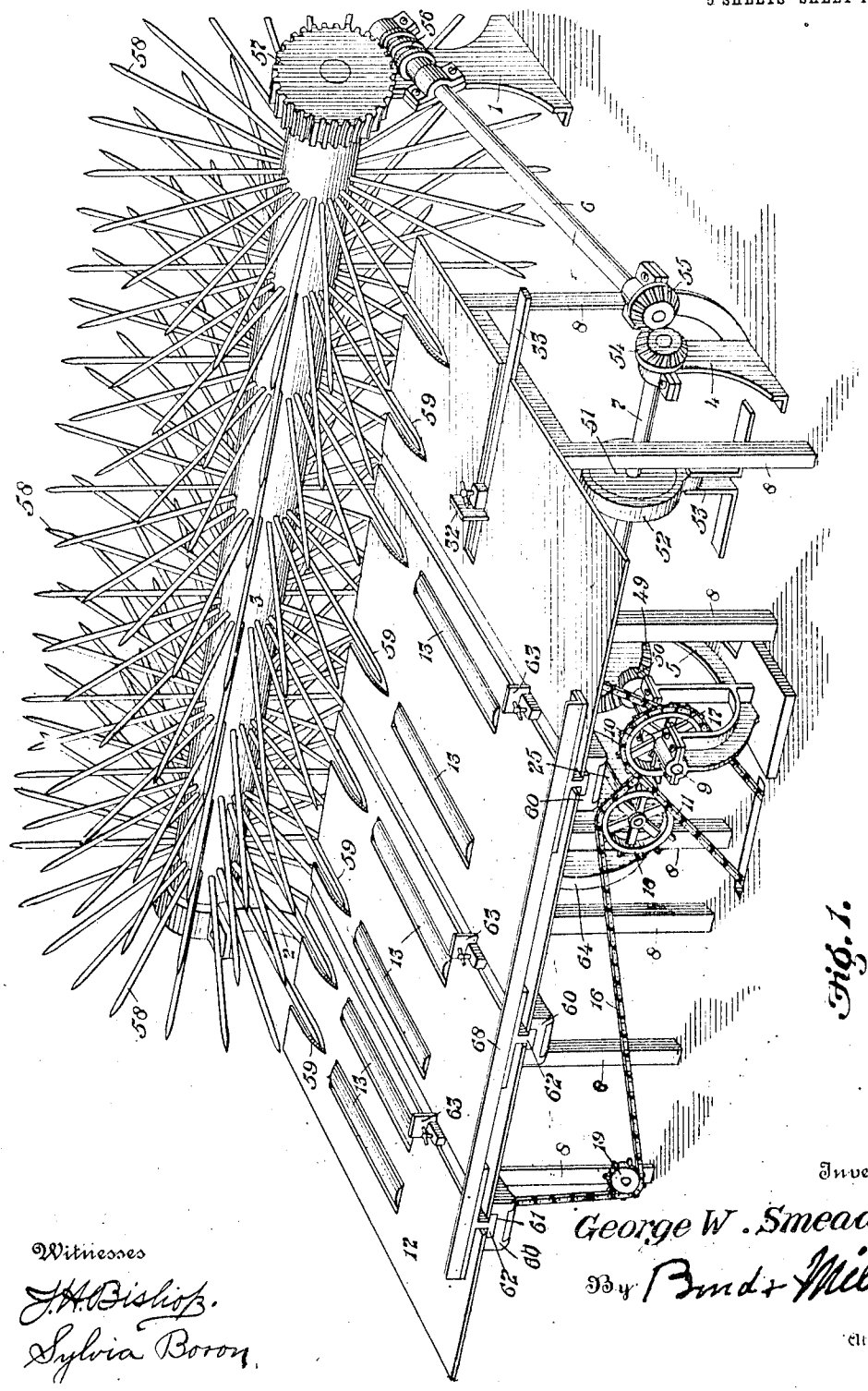

Fig. 1.

Witnesses

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5 SHEETS—SHEET 2.

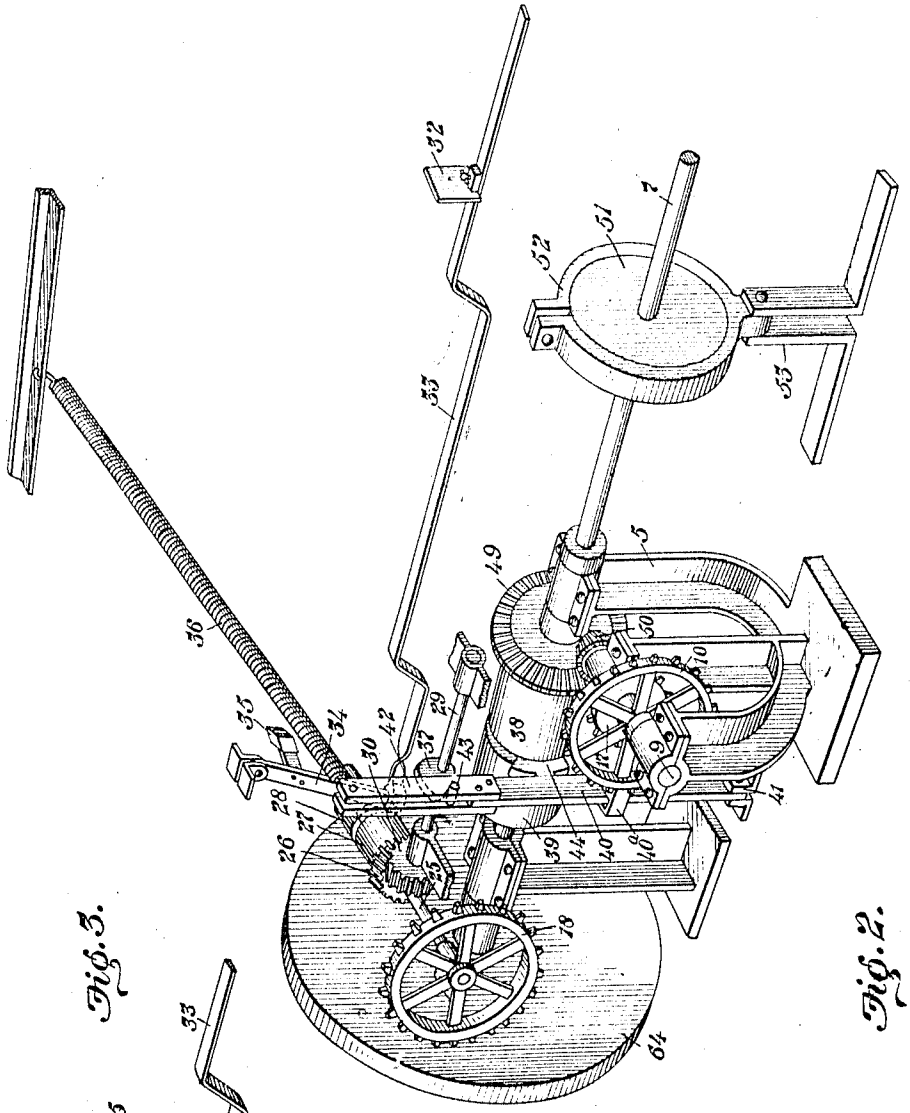

Fig. 2.

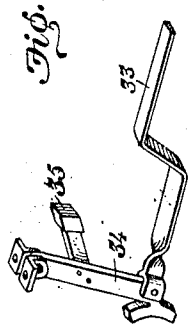

Fig. 3.

Witnesses

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5 SHEETS—SHEET 3.

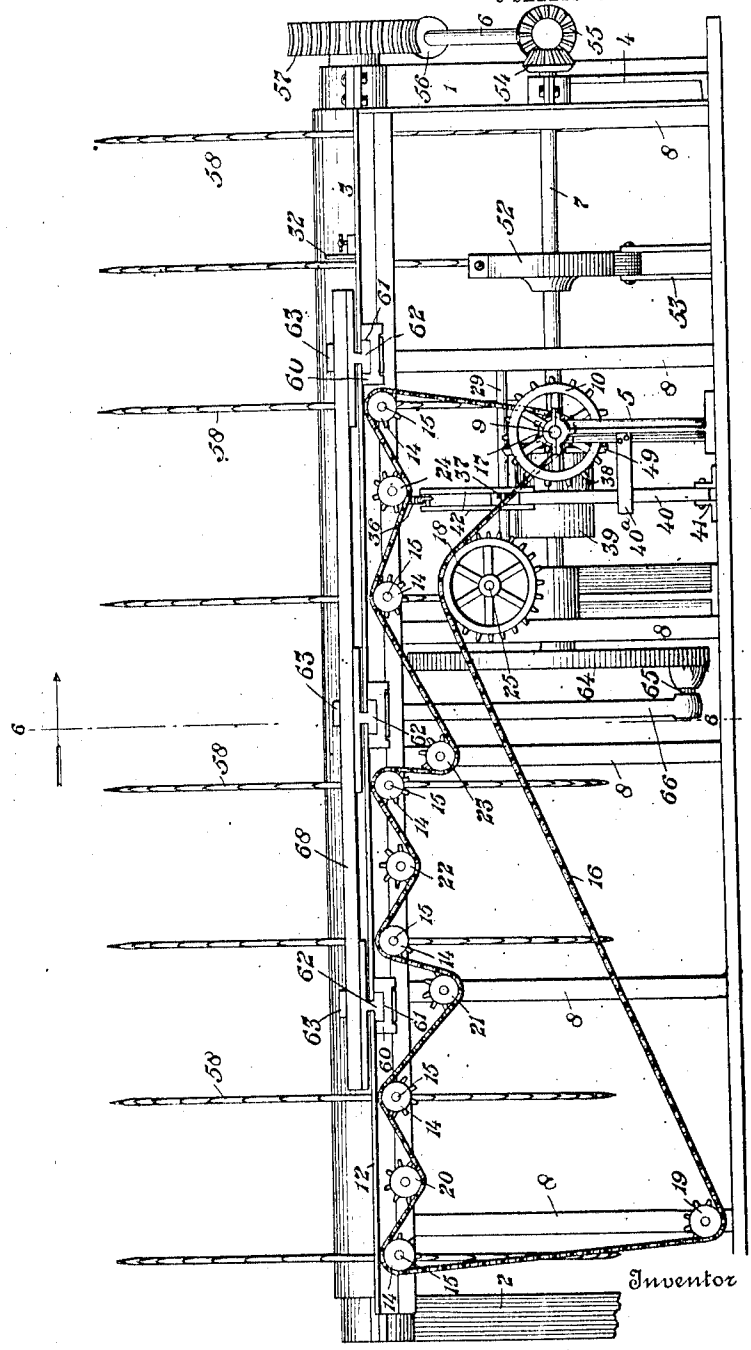

Fig. 4.

Witnesses

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5 SHEETS—SHEET 4.

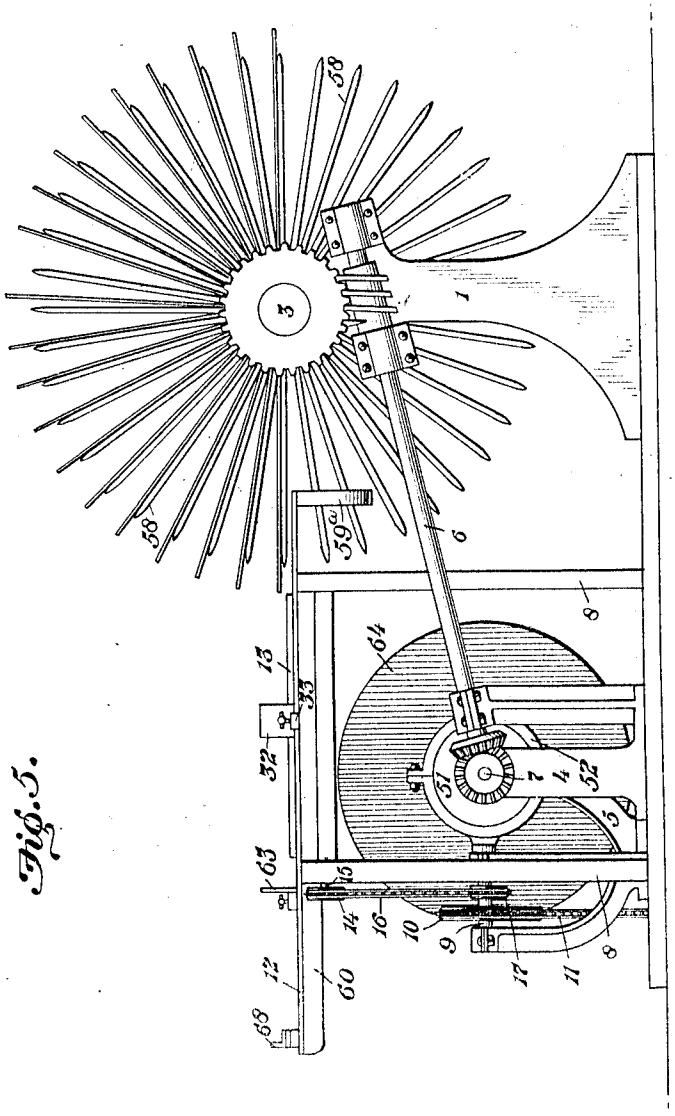

Fig. 5.

Witnesses

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5 SHEETS—SHEET 5.

Fig. 6.

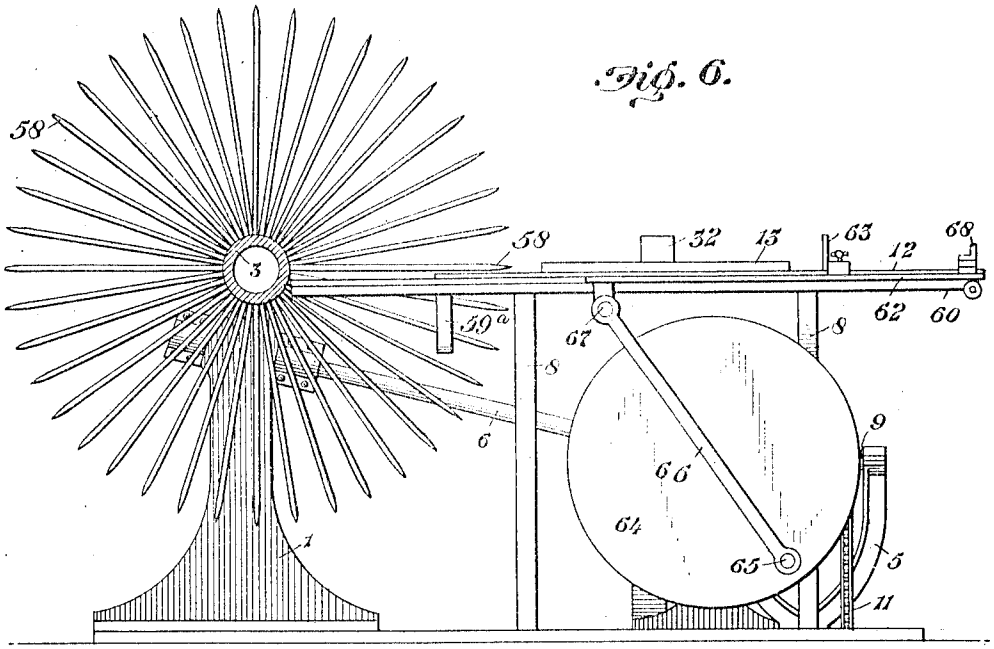


Fig. 7.

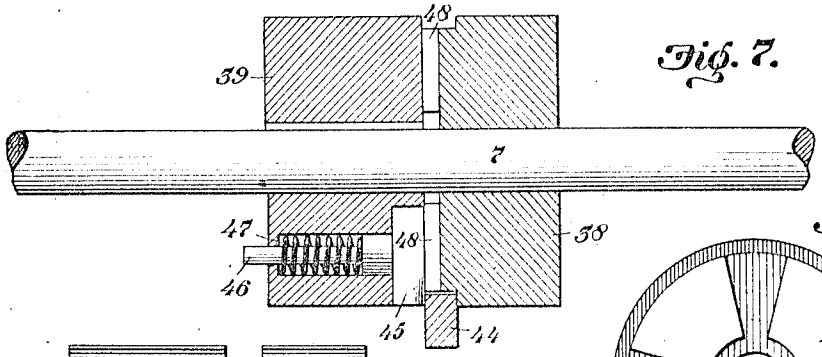
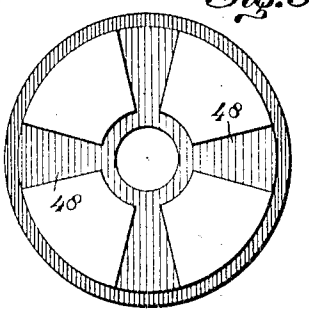


Fig. 9.



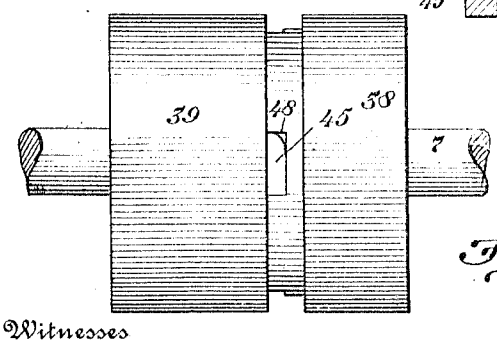


Fig. 8.

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Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE W. SMEAD, OF CANTON, OHIO, ASSIGNOR TO THE BERGER MANUFACTURING COMPANY, OF CANTON, OHIO, A CORPORATION OF OHIO.

SHEET-COOLING MACHINE.

1,039,202. Specification of Letters Patent. Patented Sept. 24, 1912.

Application filed February 1, 1912. Serial No. 674,698.

To all whom it may concern:

Be it known that I, GEORGE W. SMEAD, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Improvement in Sheet-Cooling Machines, of which the following is a specification.

My invention relates to sheet cooling machines designed and calculated to receive from a galvanizing tank or other source such as commonly employed in the manufacture of sheet metal, the sheets when cooled to be employed and used in various ways in the manufacture of sheet metal products.

The objects of the present invention pertain more specifically to the automatic handling of sheets as they travel, or are moved from the galvanizing tank or its equivalent; the feeding of the sheets on to the receiving table of the machine and the intermittent movements of the sheets during their travel through the machine proper.

As the present invention has to do exclusively with the automatic handling of the sheets for cooling purposes, the mechanism employed to feed the sheets is not illustrated as such mechanism has no specific reference to the objects and purposes of the present invention.

The present invention having to do with the sheets as they are delivered one at a time upon the receiving table.

I attain the above pointed out objects and purposes by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view, showing the different parts of the machine properly arranged with reference to each other. Fig. 2 is a perspective view of portions of the machine having specific reference to the clutches and their actuating devices. Fig. 3 is a detached view, showing portions of the mechanism designed to bring into action the initiative or first acting clutch. Fig. 4 is a front elevation. Fig. 5 is an end view, showing the end of the machine provided with the gear for actuating the sheet lifting finger-shaft. Fig. 6 is a transverse section taken on line 6—6, Fig. 4. Fig. 7 is a sectional view of the machine actuating clutch member showing a portion of its shaft, also showing the clutch members unlocked. Fig. 8 is a side elevation showing the machine actuating clutch members locked and a portion of the shaft upon which said members are located. Fig. 9 is a face view of the loosely mounted clutch member.

Similar numerals of reference indicate corresponding parts of all the figures of the drawings.

In the accompanying drawings, 1 and 2 represent the standards or supports, in which standards or supports the sheet actuating shaft 3 is journaled.

4 and 5 are the standards in which the sheet actuating shaft 6 and the machine actuating shaft 7 are journaled.

8 represents a series of supports or standards designed to support the machine proper in proper elevation, which supports together with the supports designed to carry the various shafts above mentioned are secured to suitable foundation, upon which foundation the machine proper rests. In the support 5 is properly journaled the power shaft 9. Upon the power shaft 9 is securely mounted the sprocket wheel 10 or its equivalent, around which sprocket wheel is located the driving belt 11, which driving belt is located around and is driven by a power wheel, which may be actuated from any source of power, but in as much as the motor designed to actuate the machine forms no particular part of the present invention, the same is not illustrated, but will be understood to be located and arranged in the usual manner regardless of the kind of power employed. Upon the front upper portion of the frame is located the sheet receiving table 12, upon which sheet receiving table the sheets of metal are fed or placed, one at a time. The feeding of the sheets being such that sufficient space between the ends of the sheets is maintained, so that the movements of the sheets hereinafter described during the cooling process will not interfere with the feeding of the sheets upon the table 12. In other words the feeding of the sheets upon the table are so timed with reference to each other that one sheet will not interfere with another, or no lapping of the sheets will occur. For the purpose of conveying the sheets upon the table, a series of sheet conveying rollers 13 are provided, the extreme top or upper surfaces of which extend a short distance above the top of the table 12, so that said rollers will carry

or move the sheets endwise and bring them into position to be moved at right angles, or substantially so from the line of travel during the time the sheets are being conveyed upon the table 12. In order to provide means for rotating all of the rollers 13 in unison and in the same direction with reference to each other the sprocket wheels 14, or their equivalents are provided, which sprocket wheels are mounted upon the shafts 15, said shafts being either formed integral with the rollers 13 or the rollers securely mounted upon said shaft.

For the purpose of imparting rotary motion to the various sprocket wheels 14 and in turn imparting rotary motion to the rollers 13, the sprocket chain 16 is provided, which sprocket chain is actuated by the sprocket wheel 17, said sprocket wheel being securely mounted in any well known manner upon the power shaft 9. The sprocket chain 16 is arranged as follows with reference to the sprocket wheels 14, first, the lower member of said sprocket chain passes over and imparts rotary motion to the sprocket wheel 18, thence under the idler 19, thence over the first or left hand sprocket wheel 14, thence under the idler 20, thence over the second sprocket wheel 14, thence under the idler 21, thence over the third sprocket wheel 14, thence under the idler 22, thence over the fourth sprocket wheel 14, thence under the idler 23, thence over the fifth sprocket wheel 14, thence under the idler 24, and thence over the sixth and last sprocket wheel of the series 14, and thence to the sprocket wheel 17. It will be understood that by this arrangement, all of the sheet conveying rollers 13 will be rotated in the same direction and in unison, but so far as the specific arrangement as to the rotation of these various conveying rollers 13, I do not desire to be confined, as it will be understood that any mechanical means readily apparent to the skilled mechanic may be employed without departing from the spirit of the invention. The sprocket chain 16 being illustrated and arranged with reference to the sprocket wheels is the preferred manner. The sprocket wheel 18 is securely mounted upon the initiative or starting shaft 25 upon which shaft is loosely mounted the beveled gear 26 and the clutch member 27, said beveled gear 26 and clutch member 27 may be formed integral with each other or made separate and rotatably connected together.

Upon the shaft 25 is securely mounted the clutch member 28 and when the clutch members 27 and 28 are rotatably connected together as hereinafter described, rotary motion will be imparted to the cam-shaft 29 by means of the beveled gear wheel 30, the action of the clutch made up of the clutch members 27 and 28 is to couple up the clutch members mounted upon the machine actuating shaft 7. The clutch located upon the shaft 25 so far as its different parts are concerned is the same as the clutch mounted upon the machine actuating shaft 7, and hence a detailed description of the clutch members and the different parts pertaining to said clutch may be and should be considered a detailed description of the clutch mounted upon the shaft 25.

It will be understood that owing to the different movements of the sheets designed to be cooled, or acted upon by the machine proper the movement of the machine cannot be continuous, but intermittent, or in other words the intermittent action of the machine proper should be so timed as to its various movements and actions to prevent any bunching or lapping of the sheets.

It will be understood that when the clutches are both disconnected the machine proper will be idle, except such parts as are necessary to impart rotary motion to the sheet conveying rollers 13, which parts are in continuous action. In order to impart intermittent action to the machine, or to such parts of the machine for intermittent action a sheet as it is fed or conveyed along and upon the sheet supporting table 12 and the conveying rollers 13 comes in contact with the trip block 32, which trip block 32 is connected to the trip bar 33. The forward end of any single sheet is brought into contact with the trip block 32 which moves said trip block 32 and the trip bar 33 a short distance which movement of the trip bar 32 couples the clutch members 27 and 28 together thereby bringing the clutch made up of said members into action by reason of the fact that the trip bar 33 is pivotally connected to the bottom or lower end of the swinging or oscillating bar 34 and when said bar is moved in the direction of the travel of the sheets of metal, the bottom or lower end of the swinging bar 34 will also be moved in the same direction, thereby coupling together the clutch members mounted upon the shaft 25. The particular manner of coupling these clutch members together will be more specifically described in a detailed description of the clutch mounted upon the machine actuating shaft 7. The only difference as to the device for actuating the clutches being that the oscillating bar 34 is swung back after being actuated by the trip bar 33 by the weighted arm 35, which weighted arm automatically swings the oscillating bar 34 into the position occupied before being acted upon by the trip bar 33 while with reference to the clutch mounted upon the machine actuating shaft 7 the function performed by the arm 35 is performed by the spring 36.

After the clutch mounted upon the shaft 25 has been coupled or brought into action

rotary motion is imparted to the cam-shaft 29 upon which cam shaft is securely mounted the cam 37. The bringing of this cam-shaft 29 and its cam 37 into action couples the clutch members 38 and 39 together as hereinafter described, which description will also apply to the clutch members mounted upon the shaft 25, except that the swinging bar 40 is preferably pivoted at its bottom or lower end and the corresponding bar 34 is pivoted at its top or upper end. In the last mentioned instance the swinging bar 34 is connected to the bottom or under side of the top part of the machine and in the other instance the swinging bar 40 is pivoted at its bottom or lower end to the brackets 41 or their equivalents, which brackets are securely mounted upon a suitable foundation or its equivalent.

To the top or upper end of the swinging bar 40 are attached the spaced bars 42, and between which spaced bars a portion of the cam 37 is located, the face of which cam comes in contact with the cross pin 43, which pin is securely connected to the spaced bars 42. As the cam is rotated the bar 40 will be moved or swung away from the clutch members 38 and 39, which movement carries with it the holding block 44, which holding block is normally located between the ends of the clutch members 38 and 39. When the block 44 is moved outward it is brought out of contact with the head 45 which head is connected to or formed integral with the sliding bolt 46, which sliding bolt is located in the fixed clutch member 39 and is automatically moved in one direction by the spring 47. When the block 44 is moved out of engagement with the head 45 the spring 47 automatically moves said head together with the bolt 46 toward the loosely mounted clutch member 38 and causes said head to enter one of the sockets or recesses 48 formed in the inner face of the loosely mounted clutch member 38 at which time the clutch members 38 and 39 are coupled together and the intermittent moving parts of the machine brought into action.

The clutch members 38 and 39, together with the machine actuating shaft 7 make one complete revolution after which the clutch members 38 and 39 are disconnected or uncoupled by the action of the spring 36, which spring moves the spaced bars 42 and the swinging bar 40 toward the clutch members 38 and 39 and forces the block or head 44 against the beveled face of the head 45, thereby moving said head out of one of the sockets 48, which movement uncouples the clutch members 38 and 39 and stops the movement of the machine controlled by the machine actuating shaft 7. Rotary motion of the loosely mounted clutch member 38 is continuous by reason of the fact that said clutch member is provided with the beveled gear wheel 49, which gear wheel meshes with the gear wheel 50, which is securely mounted upon the shaft 9.

For the purpose of frictionally holding the machine actuating shaft 7 so that said shaft will not be rotated by any momentum which might be imparted to said shaft, or more specifically from the moving parts of the machine, said shaft is provided with the friction-disk 51, around which friction-disk is located the friction-band 52, said friction-band being supported and held in proper position by means of the brackets 53, or their equivalents. It will be understood that the spring 36 should be sufficiently strong and its tension should be such that it will overcome the resistance offered by the spring 47 when its action is such as to move the head 45 out of one of the sockets 48 formed in the inner face of the clutch member 38.

Upon the machine actuating shaft 7 is securely mounted the gear wheel 54, which gear wheel meshes with the gear wheel 55, said gear wheel being securely mounted upon the sheet lifting actuating shaft 6. The rear end of said actuating shaft is provided with the tangent or worm-gear 56, which worm-gear meshes with the gear wheel 57, said gear wheel being securely mounted upon the sheet actuating shaft 3. The sheet actuating shaft 3 is provided with a series of radial sheet lifting fingers 58, the fingers of each row occupying substantially the same plane, but the rows spaced apart a sufficient distance to permit the sheets of metal to be passed between two rows of lifting fingers. The table 12 is provided with a series of openings or recesses 59, which recesses permit the sheet lifting fingers to move upward and carry with them the sheets of metal as they are intermittently delivered upon said fingers as hereinafter described.

Directly below the table 12 are located the guide-bars 60, which guide-bars are provided with the grooves 61, in which grooves are slidably mounted the reciprocating bars 62, to which bars are adjustably connected in any convenient and well known manner, the push heads or blocks 63, which push heads or blocks are for the purpose of forcing or sliding the sheets toward and upon the sheet lifting fingers 58. For the purpose of actuating the sheet pushing heads or blocks 63 the shaft 7 is provided with the wheel 64 or its equivalent, which wheel is provided with the wrist pin 65, to which wrist-pin is connected the pitman 66, which pitman is pivotally connected to the center reciprocating bar 62 by means of the bracket 67.

For the purpose of causing all of the reciprocating bars 62 to move in unison their rear ends are tied together by means of the

tie-bar 68, which tie bar is connected to the reciprocating bars 62 in any convenient and well known manner; but the connection should be such that the tie bar will be rigidly connected to the reciprocating bars 62 so that all of the bars 62 will reciprocate in exact unison. This is of importance, owing to the fact that should any of the push heads 63 move in advance one of the other sheets would not be moved in true alinement toward the lifting fingers 58, or in other words they would not be moved at a true right angle to the line of movement of the line of sheets during the time they are fed or delivered upon the table 12.

It will be understood that as the lifting fingers 59 are rotated they will intermittently pick up the sheets and carry them around with the lifting fingers until they have been carried over the shaft 3, after which they will be removed preferably by an operator skilled in the art of sheet metal manufacture, so that if desired defective sheets may be separated from the perfect ones, if in the event there should be any defective sheets. It will also be understood that the two clutches are in a sense interacting, that is to say, the machine actuating clutch is brought into action by the action of the clutch coupled by the movement of a sheet as it is brought upon the sheet receiving table. It will also be understood that by the action of the parts intermediate the two clutches the machine actuating clutch is uncoupled or thrown out of action to be again brought into action by the coupling up of the initiative or sheet tripping clutch.

For the purpose of preventing any accidental lateral movement of the swinging bar 40, and properly guiding the holding block 44, the guide bar 40^a is provided. For the purpose of preventing the lifting fingers 58 from striking the bottom or underside of the sheet receiving table 12 and insuring their proper passage through the openings or recesses 59, the guide fingers 59^a are provided, which guide fingers are extended downward as illustrated in Figs. 5 and 6.

Having fully described my invention what I claim as new and desire to secure by Letters Patent, is—

1. In a sheet cooling machine, the combination of a sheet receiving table, a series of sheet conveying rollers adapted to move the sheets upon the table, a series of guide bars located in a plane below the receiving surface of the table, reciprocating bars located in the guide-bars, said reciprocating bars provided with push-heads, said push-heads located above the sheet receiving table, a trip bar provided with a trip head, said trip head located in the path of the movement of the sheets actuated by the conveying rollers, a clutch adapted to be brought into action by the movement of the trip head and trip bar, a second clutch adapted to be brought into action by means intermediate the clutch actuated by the clutch head and bar, said last mentioned clutch adapted to bring into action the sheet moving and lifting devices, substantially as and for the purpose specified.

2. In a sheet cooling machine, the combination of a sheet receiving table, sheet conveying rollers, means for rotating said sheet conveying rollers, an initiative clutch and means for bringing said initiative clutch into action, a machine actuating clutch, and means intermediate the initiative clutch and the machine actuating clutch adapted to bring the machine actuating clutch into action, substantially as and for the purpose specified.

3. In a sheet cooling machine, the combination of a sheet receiving table, means for conveying sheets upon said receiving table, inter related clutches, means for bringing one of the inter related clutches into action by the movement of a sheet, and means intermediate the inter acting clutches adapted to bring the machine actuating clutch into action by the clutch brought into action by the movement of a sheet, a shaft provided with sheet lifting fingers and means for moving the sheets upon the sheet receiving table toward and upon the lifting fingers, substantially as and for the purpose specified.

4. In a sheet cooling machine, the combination of a sheet receiving table, means for conveying sheets upon said receiving table, inter related clutches, means for bringing one of the inter related clutches into action by the movement of a sheet, and means intermediate the inter acting clutches adapted to bring the machine actuating clutch into action by the clutch brought into action by the movement of a sheet, a shaft provided with sheet lifting fingers and means for moving the sheets upon the sheet receiving table toward and upon the lifting fingers, and means for actuating the lifting fingers, substantially as and for the purpose specified.

5. In a sheet cooling machine, the combination of a sheet receiving table, sheet conveying rollers, means for rotating said sheet conveying rollers, a power shaft having mounted thereon a gear wheel, a gear wheel meshing with the gear wheel mounted upon the power shaft, said gear wheels adapted to impart rotary motion to the machine actuating shaft, said machine actuating shaft provided with a pitman wheel, a pitman journaled to said pitman wheel, reciprocating bars operatively connected to said pitman, said reciprocating bars provided with sheet push heads, two clutches, one of said clutches adapted to be coupled in advance of the other and the action of the first coupled clutch adapted to couple the other clutch

and the last coupled clutch adapted to actuate the intermittent moving parts of the sheet actuating machine, substantially as and for the purpose specified.

6. In a sheet cooling machine, the combination of a sheet receiving table, means for conveying sheets upon said table in tandem relationship with reference to each other, an initiative clutch, a trip head and a trip bar adapted to couple the initiative clutch by the tandem movement of a sheet and means for automatically uncoupling the initiative clutch members, a machine actuating clutch and means intermediate the initiative clutch and the machine actuated clutch and means to couple the machine actuated clutch, a machine actuating shaft having mounted thereon the machine actuated clutch and a pitman wheel, reciprocating bars provided with sheet push heads, said sheet push heads located above the sheet receiving table, a pitman connected to the pitman wheel and to one of the reciprocating bars and means for tying the reciprocating bars together, a shaft located at the rear of the sheet receiving table, said shaft provided with sheet lifting fingers, said sheet lifting fingers arranged in longitudinal rows and adapted to pass through recesses in the forward receiving table and means intermediate the machine actuating clutch and the shaft provided with the lifting fingers adapted to actuate said shaft provided with a lifting finger, substantially as and for the purpose specified.

7. In a sheet cooling machine, the combination of a sheet receiving table, means for conveying sheets upon and from said sheet receiving table, intermittent rotating lifting fingers adapted to receive the sheets fed from the sheet receiving table, differently timed clutches and mechanical means for coupling said clutches one in advance of the other.

8. In a sheet cooling machine, the combination of a sheet receiving table, means for conveying sheets upon and from said sheet receiving table, intermittent rotating lifting fingers adapted to receive and lift sheets fed from the sheet receiving table, differently timed clutches, mechanical means for coupling said clutches one in advance of the other and mechanical means for uncoupling the clutches.

9. In a sheet cooling machine, the combination of a sheet receiving table, sheet conveying rollers adapted to convey sheets upon the table in tandem relationship with reference to each other, a trip block located in the path of the tandem movement of the sheets, a reciprocating trip bar adapted to be actuated in one direction by the trip head, a swinging bar connected to said trip bar and provided with a weighted arm, a first or initiative clutch adapted to be coupled and brought into action by the movement of the trip bar when moved in the direction of the movement of a sheet, and a second clutch, and means intermediate said first or initiative clutch and said second clutch, and means adapted to bring said second clutch into and out of action, substantially as and for the purpose specified.

10. In a sheet cooling machine, the combination of a sheet receiving table, sheet conveying rollers adapted to convey sheets upon the table in tandem relationship with reference to each other, a trip block located in the path of the tandem movement of the sheets, a reciprocating trip bar adapted to be actuated in one direction by the trip head, a swinging bar connected to said trip bar and provided with a weighted arm, a first or initiative clutch adapted to be coupled and brought into action by the movement of the trip bar when moved in the direction of the movement of a sheet, and a second clutch, means intermediate said first or initiative clutch and said second clutch, and means adapted to bring said second clutch into and out of action, and means for moving the sheets from the sheet receiving table, a series of lifting fingers adapted to receive the sheets from the sheet receiving table, substantially as and for the purpose specified.

11. In a sheet cooling machine, the combination of a sheet receiving table, sheet conveying rollers adapted to convey sheets upon the table in tandem relationship with reference to each other, a trip block located in the path of the tandem movement of the sheets, a reciprocating trip bar adapted to be actuated in one direction by the trip head, a swinging bar connected to said trip bar and provided with a weighted arm, a first or initiative clutch adapted to be coupled and brought into action by the movement of the trip bar when moved in the direction of the movement of a sheet, and a second clutch, means intermediate said first or initiative clutch and said second clutch, means adapted to bring said second clutch into and out of action, means for moving the sheets from the sheet receiving table, a series of lifting fingers adapted to receive the sheets from the sheet receiving table, and means for actuating the sheet lifting fingers, substantially as and for the purpose specified.

12. In a sheet cooling machine, the combination of a sheet receiving table provided with openings in its rear portion, sheet conveying rollers adapted to convey the sheets upon the table in tandem relationship with reference to each other, reciprocating bars located intermediate the ends of the sheet receiving table push blocks connected to and movable with the reciprocating bars, a pitman pivotally connected to one of the re-

ciprocating bars, means adapted to actuate the pitman connected to one of the reciprocating bars, a shaft located at the rear of the sheet receiving table, said shaft provided with sheet lifting fingers, said sheet lifting fingers adapted to move through the slots in the rear portion of the sheet receiving table, two clutches, a trip bar and a trip head actuated in one direction by the movement of a sheet and in the direction to couple one of the clutches and means actuated by the sheet actuated clutch adapted to couple the second clutch and said second clutch adapted to actuate the sheet cooling mechanism, substantially as and for the purpose specified.

13. A sheet cooling machine, the combination of a sheet receiving table, conveying rollers located intermediate the ends of the sheet receiving table, means for continuously actuating said conveying rollers, two clutches, one initiative clutch and the other a machine actuating clutch, means for automatically coupling said clutches in different timed relationship with reference to each other, reciprocating bars provided with sheet push heads, said bars and push heads adapted to move the sheets from the sheet receiving table and lifting fingers adapted to receive the sheets, substantially as and for the purpose specified.

14. A sheet cooling machine, the combination of a sheet receiving table, conveying rollers located intermediate the ends of the sheet receiving table, means for continuously actuating said conveying rollers, two clutches, one initiative clutch and the other a machine actuating clutch, means for automatically coupling said clutches in different timed relationship with reference to each other, reciprocating bars provided with sheet push heads, said bars and push heads adapted to move the sheets from the sheet receiving table and lifting fingers adapted to receive the sheets, and means for actuating the sheet lifting fingers, substantially as and for the purpose specified.

15. A sheet cooling machine, the combination of a sheet receiving table, conveying rollers located intermediate the ends of the sheet receiving table, means for continuously actuating said conveying rollers, two clutches, one initiative clutch and the other a machine actuating clutch, means for automatically coupling said clutches in different timed relationship with reference to each other, reciprocating bars provided with sheet push heads, said bars and push heads adapted to move the sheets from the sheet receiving table and lifting fingers adapted to receive the sheets, means for actuating the sheet lifting fingers, and means for uncoupling the clutches in different timed relationship, substantially as and for the purpose specified.

16. In a sheet cooling machine, the combination of a sheet receiving table, said sheet receiving table provided with a series of recesses in its rear portion, a shaft provided with a series of sheet lifting fingers, said fingers adapted to pass through the series of openings in the sheet receiving table, means for feeding sheets from the sheet receiving table upon the sheet receiving fingers, substantially as and for the purpose specified.

17. In a sheet cooling machine, the combination of a sheet receiving table, said sheet receiving table provided with a series of recesses in its rear portion, a shaft provided with a series of sheet lifting fingers, said fingers adapted to pass through the series of openings in the sheet receiving table, means for feeding sheets from the sheet receiving table upon the sheet receiving fingers, and means for actuating the shaft provided with the sheet lifting fingers, substantially as and for the purpose specified.

18. In a sheet cooling machine, the combination of a sheet receiving table, means for feeding sheets in tandem relationship with reference to each other upon and from said sheet receiving table, two clutches, each of the clutches consisting of a continuously rotating member and a member adapted to be rotatably coupled to the continuously rotated members, and means for rotatably coupling the clutch members together and means intermediate the two clutches adapted to uncouple one of the clutches, substantially as and for the purpose specified.

19. In a sheet cooling machine, the combination of a sheet receiving table, means for feeding sheets in tandem relationship with reference to each other upon and from said sheet receiving table, two clutches, each of the clutches consisting of a continuously rotating member and a member adapted to be rotatably coupled to the continuously rotated members, and means for rotatably coupling the clutch members together and means intermediate the two clutches adapted to uncouple one of the clutches, and means for lifting the sheets from the sheet receiving table, substantially as and for the purpose specified.

20. In a sheet cooling machine, the combination of a sheet receiving table, means for feeding sheets in tandem relationship with reference to each other upon and from said sheet receiving table, two clutches, each of the clutches consisting of a continuously rotating member and a member adapted to be rotatably coupled to the continuously rotated members, and means for rotatably coupling the clutch members together and means intermediate the two clutches adapted to uncouple one of the clutches, means for lifting the sheets from the sheet receiving table, and means for actuating the

sheet lifting means, substantially as and for the purpose specified.

21. In a sheet metal cooling machine, the combination of a sheet receiving table, a power shaft and a machine actuating shaft, a clutch mounted upon said machine actuating shaft, said clutch consisting of clutch members loosely and rotatably mounted upon said shaft respectively, means to rotatably connect the loosely mounted clutch member with the rotatably mounted clutch member, a second clutch adapted to actuate the means to connect the clutch members upon the machine actuating shaft, substantially as and for the purpose specified.

22. In a sheet metal cooling machine, the combination of a sheet receiving table, a power shaft and a machine actuating shaft, a clutch mounted upon said machine actuating shaft, said clutch consisting of clutch members loosely and rotatably mounted upon said shaft respectively, means to rotatably connect the loosely mounted clutch member with the rotatably mounted clutch member, a second clutch adapted to actuate the means to connect the clutch members upon the machine actuating shaft, and means to feed the sheets upon and from the sheet receiving table, substantially as and for the purpose specified.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

GEORGE W. SMEAD.

Witnesses:
JOHN H. BISHOP,
F. W. BOND.