

Mechanical Massage At The Battle Creek Sanitarium

Attempts to mimic massage with machines grew out of the Industrial Revolution. In the 1890s, these mechanical marvels were used as an auxiliary to hands-on massage.

Imagine walking into a health club, and instead of a large room filled with exercise equipment, there are stations for different kinds of massage and movements. You can go to one station that kneads your abdomen, another that vibrates your legs and arms, and yet another that applies friction to your feet. Such was the scene at the Mechanical Swedish Movement Department at the Battle Creek Sanitarium in the 1890s (Figure 1, right).

Machines designed by J. Harvey Kellogg did everything from standard massage techniques like kneading, percussion, rolling and vibration to inversion on a tilting table, and balancing on a revolving seat. The mechanical apparatus was used as an auxiliary to manual massage, exercise, hydrotherapy, electricity and other therapies.

The room itself was a marvel of mechanical ingenuity. The individual machines were attached to a central shaft

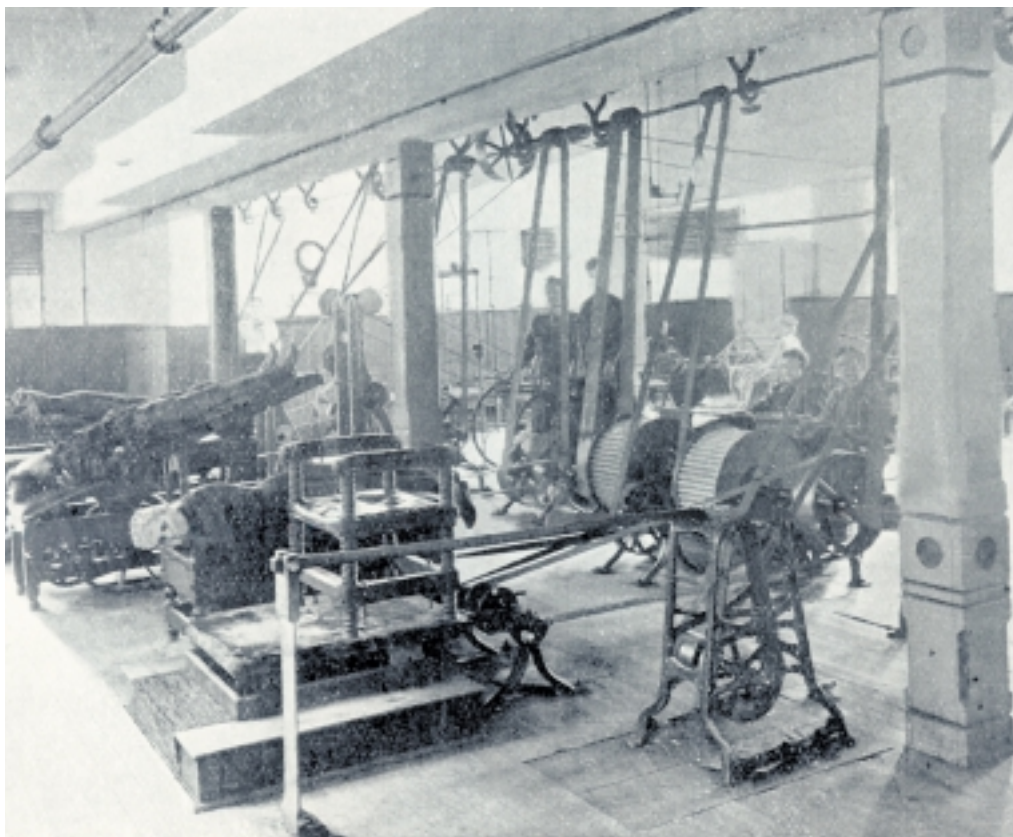


Figure 1. Mechanical Swedish Movement Department at the Battle Creek Sanitarium, c. 1895



Figure 2. Vibrating chair devised by J.H. Kellogg, c.1883

running horizontally through the center of the room near the ceiling. The shaft turned to provide power for each station through straps and pulleys. A closer look at each machine reveals its own unique design of levers, gears, pulleys, shafts and other parts that impart motion. Many of the machines look like massage tables, while others look similar to parts of farm machinery adapted for this special use. Early sources of power were hand and foot cranks, simple steam engines, and later, electricity.

Machines And Massage

Kellogg wasn't the only person developing massage machines in the late 1800s. He was well aware of the machines developed by Gustav Zander at the Medico-Mechanical Institute in Stockholm, Sweden, and those designed by George Taylor of New York. All of these men were steeped in knowledge of Pehr Ling's medical gymnastics, and designed machines to impart some of the passive and active movements of Ling's system.

Kellogg believed that mechanical massage could serve as a more or less perfect imitation of manual massage. While he thought the human hand superior to machines for kneading techniques, he considered the movements of shaking and vibration well-suited for mechanical application. Kellogg observed that machines may do better "in cases requir-

ing vigorous and prolonged application, for the reason that much more vigorous, rapid, and uniform movements can be executed by machinery than by hand, and the movement can be continued for as long as necessary" (Kellogg, J.H. *The Art Of Massage: It's Physiological Effects And Therapeutic Applications*).

Vibration

A variety of vibration machines were developed to apply rapid oscillating movements to the whole body or to select areas. Vibratory movements were thought to stimulate the circulatory, muscular and nervous systems to bring about various therapeutic benefits.

The vibrating chair (Figure 2, left) was developed by Kellogg in 1883. It was designed to impart vibratory impulses to the lower trunk, and to be "felt powerfully in the lower bowel, and have a decidedly stimulating effect upon the rectum." The person sitting in the chair could vary the effect, and "by placing the hands upon the arms of the chair, and inclining the trunk either forward or backward" cause the impulses to be transmitted to the lower or upper part of the spinal column (Kellogg). The application would last from 3 to 10 minutes.

The vibrating bar (Figure 3, below left) was a versatile apparatus. It was basically a pair of horizontal bars that vibrated. A person grabbed the bar, and



Figure 3. Vibrating horizontal bars, c. 1890



Figure 4. Table with vibrating bar and padded cradle for trunk vibration, c.1890

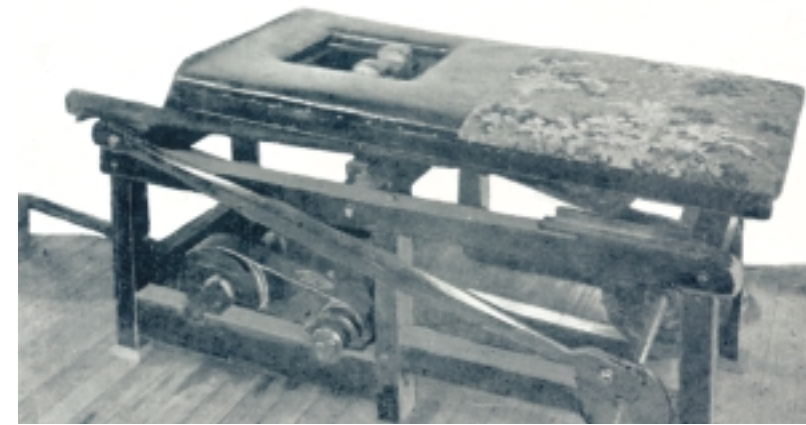


Figure 5. Kneading table for the abdomen, c. 1883

by varying the parts of body kept rigid or relaxed, controlled which areas received the greatest vibration. For example, to stimulate the upper spine, the arms would be held rigid so "the muscles of the shoulder being fixed and the bar held firmly, the vibratory movements may be communicated to the upper spine and head with great vigor." Vibration could be imparted to the visceral organs by "bringing these portions of the [vibrating] bar" (Kellogg). Vibration to the feet was accomplished with the person sitting in a chair with his or her feet against the uprights. Thirty to 60 seconds was enough time on this apparatus to experience the full effects.

Vibration was applied to the trunk by means of a horizontal vibrating bar that ran perpendicular to a padded table. If you look closely at the photo in Figure 4 (opposite page), you will see that each of the patients is in a padded cradle attached to the bar. When the horizontal bar vibrated, the movement was transferred to their back, side or front trunk, depending on how they were lying. Oscillations were reported to be 1,200 to 1,500 per minute. The purpose of the apparatus was "to communicate mechanical motion to the liver, stomach, bowels, and other abdominal viscera" and stimulate peristaltic activity, while

"quickening the circulation in the large viscera of the abdomen" (Kellogg).

Mechanical Kneading

There were mechanical kneading machines for the arms and legs, but the most useful of all, according to Kellogg, was the kneading table for the abdomen (Figure 5, above). Built originally in 1883, this apparatus was a padded table with a large hole near the top, and in the opening were six padded blocks. These blocks were attached to separate cams so that they operated independently, and moved up and down in a wave-like motion to simulate kneading.

But that wasn't all it did. "Simultaneously with the vertical movement of this kneading device, the table top, with the patient which it bears, is made to move back and forth, thus changing the relation of the pads to the abdominal surface, and causing them to knead the entire abdomen. The two sets of movements are so timed that the wave-like kneading movement is made to follow very closely the course of the colon" (Kellogg). There was a similar Zander machine that was in use at the time.

The kneading table was used primarily as part of the treatment for patients with constipation. It also was used for a condition Kellogg called "dilatation of the stomach," in which the stomach



Figure 6. Trunk rolling apparatus, c. 1890

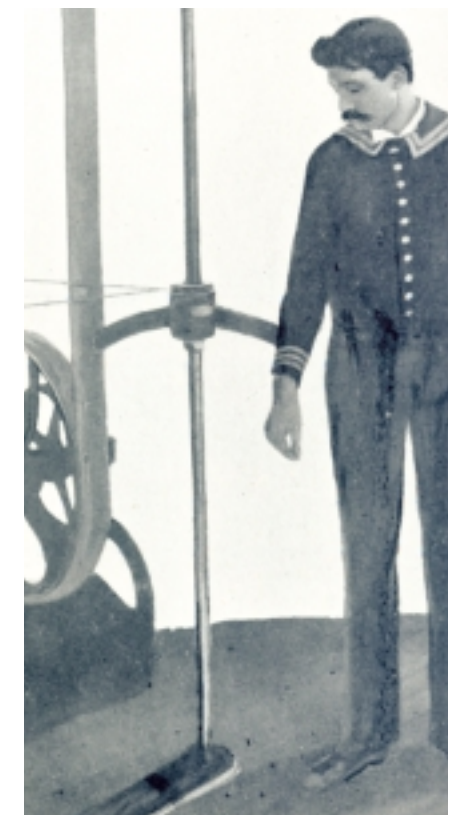


Figure 7. Percussion machine for simulating slapping, c. 1890

“does not empty itself with normal promptness,” due to motor insufficiency. In the latter case, the machine was used within an hour or two of eating to stimulate and speed up the process of digestion.

Trunk Rolling

Later models of the trunk rolling apparatus (Figure 6, page 141) can still be seen sitting in the corners of old gymnasiums and YMCAs. It consisted of a broad strap attached to a pair of pulleys “moving in alternation and in opposite directions.” The trunk is pulled first in one direction, and then in the other, with a rapid movement of the machine.

When the strap was placed around the waist, it imparted a rolling movement to the muscles of the trunk and a shaking motion to the visceral organs. It could be applied across the shoulders for a deep-kneading effect. Kellogg reported that the trunk rolling machine was a “favorite apparatus with patients who [were] under treatment by mechanical massage” and stated that he devised the machine in 1885 (Kellogg). In later years, it was erroneously associated with weight loss, a claim never made by Kellogg.

Mechanical Percussion And Friction

The percussion machine for simulating slapping (Figure 7, page 141) consisted of a broad strap attached to a revolving vertical bar. Different degrees of force

were achieved by varying the speed of the revolutions, the thickness of the strap and the position of the person. The slapping machine was used to stimulate surface circulation, and was used effectively on the shoulders and back, the legs and thighs, and the soles of the feet.

The beating machine (Figure 8, right) was primarily used for the spine and chest, and over the abdomen. Three levers with padded ends moved in alternating rhythm to create the effect of beating. Kellogg felt that the beating machine was “less valuable in comparison with beating administered by hand.” There was a similar Zander machine.

The revolving ribbed cylinder for friction of the feet (Figure 1, page 138, and Figure 9, below) illustrates some the human aspects of engineering that were taken into consideration for the design of these machines. Kellogg made two improvements over the previous Zander design. One was the addition of an “apron,” or covering, over the cylinder ribs to prevent wear and tear on the person’s stockings or slippers. The other was insulation of the chair to decrease the static electricity that built up in the person’s body as a result of the friction. Kellogg observed that it was “not an uncommon thing to see the hair of the patient sitting in the insulated seat, erected by the electric charge generated by the friction machine” (Kellogg).



Figure 8. Beating machine with padded levers, c. 1890

Mechanical Marvels

Although the medical gymnastics machines are curiosities, they are mechanical marvels in their own right, and can be appreciated for their beauty of design. They are a testament to the ingenuity of humans and the inventiveness of our professional ancestors. In the end though, manual massage is with us today, while the Kellogg, Zander and Taylor machines have become the stuff of history. 📖



Figure 9. Revolving ribbed cylinder for friction of the feet; apron prevented wear on socks and build up of static electricity, c. 1890



Patricia J. Benjamin, Ph.D., is the co-author of *Tappan's Handbook of Healing Massage Techniques* and *Understanding Sports*

Massage. She has been writing and teaching about the history of massage therapy since the early 1980s. She can be contacted via E-mail at: pat_benjamin@sbcglobal.net

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