To all whom it may concern:

Be it known that I, ALBERT F. ROCKWELL, a citizen of the United States, residing at Bristol, county of Hartford, State of Connecticut, have invented a certain new and useful Sectional Crank-Shaft, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to the general classes of crankshafts, but it is particularly adapted for use in connection with motors wherein the pitman is utilized for converting a reciprocating motion of the piston, or other power imparting device, to a rotary motion through the medium of a rotary shaft.

Heretofore it has generally been the practice, where one or more cranks are arranged intermediate the ends of the shaft, to connect the pitman to the crank by a sectional box on the end of the pitman. I am enabled to provide a solid pitman box on the end of the pitman, as for example, by providing an enlargement or head and boring a suitable opening therein for the reception of the crank. I also provide means for permitting parts of the crank-shaft to be removed for repairs, or for other purposes, and I am enabled to do this by providing a sectional crank-shaft without appreciably reducing its strength or eliminating any of the advantages of the solid crank-shaft. I also provide means whereby lengthy crankshafts may be transported in a convenient manner, and so that the sections may be set up when the motor or engine is being assembled.

Other advantages as well as the novel details of construction of this invention will be specifically referred to hereinafter, it being understood that changes in form, proportion and minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

In the drawings: Figure 1 illustrates a side elevational view partly in section, of the crank-shaft, its standards or bearings and pitman connected thereto; and Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

In the drawings which illustrate a simple form of my invention, 1 designates the standards or bearings of which there are three shown, although any number may be used to suit the length and requirements of the crank-shaft. Each of these standards is provided with a removable cap-piece 2, which in conjunction with the shaft-receiving portion, its standard 1, serves to form a bearing for the shaft and will normally retain the shaft against lateral displacement, said cap-piece or pieces, may be removed in order to displace or assemble the shaft. These standards tend to be arranged in alignment, so that the bearings will align 55 and thereby receive and cause to aline the various sections of the crank-shaft. The intermediate member 3 of the crank-shaft, is illustrated as having oppositely disposed crank-arms 4 and 5 respectively, said crank-arms having right-angled disposed shafts 60 or tubular projections 6 and 7 arranged near their terminals, said tubular projections 6 and 7 being provided to receive the pins 8 and 9, on the crank-arms 10 and 11, of the shaft-sections 12 and 13 respectively. It will be obvious that the pins 8 and 9 extend approximately through the sleeves 6 and 7, and that the sleeves 6 and 7 are of lengths equal to the lengths of the pins 8 and 9, and the advantage of this is that when the parts are assembled, both the sleeves and the pins are supported at their respective ends as well as at their intermediate portions. Therefore, when the sections are assembled, the connecting portions formed by the pins 8 and 9 and the sleeves 6 and 7, will be in effect solid, and for all practical purposes, will be equal to resisting any strain put upon the connection by the solid box 75 14 and 15, of the pitmen or piston rods 16 and 17. In other words, the fact that the connections formed by the pins 8 and 9 and the sleeves 6 and 7, are sectional connections, will not reduce the resisting power of the connections below what that would be if the connections were integral. By providing the boxes on the ends of the pitmen or piston-rod integral or unitary with the respective pitmen, any liability of the boxes working loose will be avoided, because the only way of disassociating the pitman from the crank-shaft would be to remove the cap-piece 2, on the standards 1, for no longitudinal movement of the crank-shaft will be permitted by the standards 1, although the crank-shaft may rotate or rock, as the case may be, in the usual manner common with such devices.

From the foregoing it will be seen that when it is necessary to repair a portion of the crank-shaft for any reason, the part to be repaired may be removed without removing the entire crank-shaft. This is particularly advantageous where a plurality of pistons are connected to a plurality of crankshafts on a single shaft.

What I claim is:

1. A crank-shaft comprising an intermediate member having crank-arms therein, tubular projections carried by said crank-arms, and complementary members of the crank-shaft having projections for engagement with the tubular projections on the intermediate member.

2. The combination with a sectional crank-shaft member having a tubular projection, of a pitman having a unitary head comprising a box into which the said tubular projection projects, a complementary crank-shaft member extending longitudinally within the tubular projection, and bearings in which the crank-shaft members are journaled, said bearings preventing longitudinal play of the crank-shaft members.
3. The combination with a sectional crank-shaft member having a tubular projection, of a complementary crank-shaft member extending longitudinally within the tubular projection, and bearings in which the crank-shaft members are journaled, and shoulders on the crank-shaft members and Cooperating with the bearings to prevent longitudinal play of the crank-shaft members.

4. The combination with a sectional crank-shaft member having a tubular projection, of a complementary crank-shaft member extending longitudinally within the tubular projection, bearings in which the crank-shaft members are

In testimony whereof, I hereunto affix my signature, in the presence of two witnesses.

ALBERT F. ROCKWELL.

WITNESSES:

Du Witt Page,

Harry W. Tuttle.